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교육학박사학위논문

A Case Study of Korean Adult EFL Writers'  
Computer-Assisted L2 Writing Focusing on the  
Use of Online Resources as L2 Writing Aids

영작 보조 목적의 온라인 자원 사용을 중심으로 본  
한국 성인의 컴퓨터 보조 영작 사례 연구

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민 주 영

A Case Study of Korean Adult EFL Writers'  
Computer-Assisted L2 Writing Focusing on the  
Use of Online Resources as L2 Writing Aids

by  
Ju Young Min

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## **ABSTRACT**

# **A Case Study of Korean Adult EFL Writers’ Computer-Assisted L2 Writing Focusing on the Use of Online Resources as L2 Writing Aids**

Ju Young Min

Department of Foreign Language Education, English Major  
The Graduate School  
Seoul National University

The present L2 writing pedagogy is required for considering the impact of technology on L2 writing. The development of computer technologies provides L2 writers with advanced technological writing aids on the Web: online dictionaries, search engines, and web-based corpora. Although these online resources have great potential to assist L2 writing, the combined use of these online resources by L2 writers during the process of L2 writing in the EFL context, beyond the classroom, has been less investigated in previous studies.

The present study investigated three Korean adult EFL writers’ use of the online resources in computer-assisted L2 writing. Each writer performed L2 writing tasks on the computer using three online resources—an online dictionary, a search engine, and a web-based corpus—in a series of thirty writing sessions. For each writer, a simultaneous think-aloud and a retrospective interview were also conducted in every session. The writing process on the computer screen with the writer’s think-aloud and the interviews were recorded and transcribed in order to identify the aspects of the writers’ use and perception of the online resources in computer-assisted L2 writing. These aspects of the use of online resources in the writing process

were classified and examined according to the purpose of each use, and the interview transcripts were analyzed by themes.

The findings revealed each writer's respective and combined use of the online resources during L2 writing and perceptual aspects related to the use of the online resources and writing in English. As the writers used L1 extensively during their L2 writing process, such an approach to L2 writing led them to use a bilingual online dictionary most frequently as well as to prefer a bilingual interface of the online resources. The writers thought that the dictionary examples provided with Korean translations were useful to them. The writers' use of a search engine and a corpus demonstrated each writer's varying perception of the function and utilization of each online resource and the writing task. The writers' L2 English writing ability and their manner of writing in English appeared to show the emergence of different aspects of using the online resources among the writers.

All the writers positively evaluated and appreciated using the online resources in L2 writing and its effect on their affective aspects. They considered the online resources to be useful and helpful in their L2 writing, especially for supporting their affective aspects related to L2 writing confidence and self-efficacy. Thus, it was found that computer-assisted L2 writing with the aid of online resources can assist not only these EFL writers' L2 writing, but also enhance their affective aspects. Their L2 writing apprehensions were relieved, and their attitude toward L2 writing had improved. The writers were also aware of the limitations of their self-directed computer-assisted L2 writing in terms of detecting and revising their own writing errors.

From the case of these three Korean adult EFL writers, the following five issues were discussed. First, computer technologies have a positive influence on the affective dimension of EFL writers. Second, the value of writing experience and practice to Korean adult EFL writers is significant, and thus it

is necessary to consider providing EFL writers with an L2 writing experience that incorporates computer technologies related to L2 writing. Third, future technology that could assist EFL writers' L2 writing was discussed. Fourth, the role of an L2 writing teacher in computer-assisted L2 writing was discussed, and finally, how to define L2 writing ability in the era of technological innovation was discussed.

Based on the case analysis and discussion, pedagogical implications and suggestions for future research were presented. The need exists for a balanced and integrated consideration of EFL writers' cognition, affect, and the use of computer technology in L2 writing pedagogy. While the active use of the online resources during L2 writing is recommended, a systemic approach to utilizing such technologies is required in order to develop and improve EFL writers' L2 writing skills. L2 writing teachers should be aware of the value of online resources in L2 writing, identify L2 writers' affective aspects, and find a proper way to support L2 writers. Computer-assisted L2 writing is able to support EFL writers' affective aspects and provide EFL writers with an instructive L2 writing experience. Further, advanced technologies to support independent EFL writers' needs and to solve their writing problems are required, and the use of online resources during L2 writing can be considered both in the current as well as future L2 writing assessments.

Keywords: Korean EFL writers, computer-assisted L2 writing, corpus,  
online dictionary, search engine, L2 writing aids, technology

Student Number: 2010-31088

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# **CHAPTER 1**

## **INTRODUCTION**

Chapter 1 discusses the research background, purpose, and significance of the present study. In Section 1.1, the background for conducting research on Korean adult EFL writers' use of online resources as second language (L2) writing aids in their computer-assisted L2 writing is discussed. Section 1.2 discusses the purpose of the present study and poses the research questions. The significance of the present study is discussed in Section 1.3. Lastly, Section 1.4 presents the organization of the dissertation.

### **1.1. Background of the Study**

Computer technology, including both hardware and software, has developed over generations, and the use of computers in educational settings and pedagogical practices has been expanded during the last two decades. The noticeable influence of computer technology on foreign language education led to the emergence and development of computer-assisted language learning (CALL), which has evolved into intelligent CALL based on technologies of natural language processing and artificial intelligence (Granger, 2015). The Internet and the World Wide Web have provided new types of writing environments, which has led to the change in writing methods, processes, practices, and—by extension—pedagogy and research

perspectives of writing. These changes have had an impact on individual writers and led to the advent of a new type of literacy called “digital literacy” (Warschauer, 2009). Recent technological advances have brought a new dimension to the writing process, which requires more recognition of its impact on L2 writing pedagogy and appreciation of its collective influence in the field of L2 writing research (Stapleton & Radia, 2010). Before teaching L2 writing to the present and next generation of L2 writers, one needs to consider the utilization of technology that supports and assists L2 writing, the role of such technology in L2 writing and its pedagogy, and future-oriented teaching and learning methods of L2 writing in the era of technological innovation.

It is worthwhile to note that the use of computers and the Internet in developed countries and developing countries has increased during the recent decade. According to the most recent worldwide investigation by the Broadband Commission of the International Telecommunication Union, Korea, which ranked first in the world in Internet use, had 98.1% of households with the Internet; 84.8% of Korean individuals used the Internet in 2013 (The Broadband Commission, 2014). Korea has the highest fixed-broadband subscriptions per 100 inhabitants in terms of the fastest broadband speed in the world in 2014 (ICT Data and Statistics Division, 2015). Based on this technological infrastructure, Korea can be defined as a high-tech-electronic-gadget-dependent society. For Korean L2 writers of English as a foreign language (EFL), especially when they are regular computer users, technological advances available in their writing environment should be considered and reflected as a distinctive feature of L2 writing pedagogy.

As the present writing environment includes computer technology, L2 writers of today are more accustomed to using a computer and the Internet than ever before. The terms *Net generation* (Tapscott, 1998, 2009) and *digital natives* (Prensky, 2001) indicate the tech-savvy characteristics of the young generation and also describe Korean EFL writers today. An L2 writer's background and characteristics are critical when considering how technologies can be used in L2 writing; L2 writers may not feel intimidated by new technologies but still may not have proper knowledge of how to use them effectively in L2 writing (Bloch, 2013). Therefore, it is necessary to focus on L2 writers and their L2-writing-related characteristics when exploring the use of technologies in L2 writing.

Current L2 writers who are surrounded by cutting-edge technologies are able to access and use various kinds of online language tools available on the Web: online dictionaries, search engines, and large scale web-based corpora. These online resources are usually available for free and easily accessible, providing useful linguistic information and potential for writing support. As a tool to access lexical information, an online dictionary can satisfy L2 writers' primary needs in L2 writing immediately in a convenient way especially when writing on a computer (Chon, 2007a, 2007b; Nesi, 2013). A search engine also affords convenient access to a vast amount of linguistic data available on the Web (Fletcher, 2013; Gatto, 2014). The use of corpora and a concordancer as reference tools in L2 writing has been explored by a number of studies (e.g., Chambers & O'Sullivan, 2004; Chang, 2011; Feng, 2014; Gilmore, 2009; Hafner & Candlin, 2007; Kennedy & Miceli, 2010; Lai & Chen, 2015; Lee, 2009; Lee, Shin, & Chon, 2009; O'Sullivan & Chambers,



2006; Park, 2012; Park & Kinginger, 2010; Quinn, 2015; Sun, 2007; Todd, 2001; Yoon, 2008; Yoon & Hirvela, 2004; Yoon & Jo, 2014). From the perspective of L2 writing aids, these online resources have great potential to assist L2 writing. Such potential of online resources as supporting tools for L2 writing has been explored in previous studies (Chang, 2011; Chun, 2004; Chon, 2007a; Lai & Chen, 2015; Lee, Lin, & Liou, 2006; Milton, 2006; Park & Kinginger, 2010; Yoon, 2016a, 2016b); these studies examined L2 writers' respective or combined use of an online dictionary, a search engine, and web corpora when solving their L2 writing problems and how these online resources are useful and beneficial in terms of helping L2 writers and supporting L2 writing. The findings from these previous studies enable us to evaluate how much new technology can enhance L2 writing (Stapleton & Radia, 2010) and affect the L2 writing process and L2 writers.

The use of computer technologies in L2 writing can be examined from the perspective of computer-assisted L2 writing. In the context of writing on computers, L2 writers can be provided with the writing support of computer technologies. Computer-supported writing utilizes computer technologies and various hardware and software tools or aids that enable writers to be more efficient in writing (Lunsford, 2006); such an approach to L2 writing transforms our traditional view on writing and requires a new type of understanding and perspective of L2 writing ability. Earlier studies in the field of computer-assisted L2 writing investigated the effect of word processing technology on L2 writing and L2 writers (Pennington, 1991, 1993) and examined the use of a computer program that assists L2 writing (Fang, 2010; New, 1999; Pennington & Brock, 1992) by showing a positive image of L2

writers who were assisted and affected by computer technology. L2 writers were better motivated for writing, and writing on a computer promoted and facilitated L2 writers' writing-related awareness, revision, and development of an effective writing process (Pennington, 2003). Considering the currently available online resources for L2 writers, research on computer-assisted L2 writing needs to investigate L2 writing assisted by new computer technologies and L2 writers' dynamic characteristics related to the use of technology. Such research would be able to provide insights into the delineation of a practical L2 writing model that reflects how L2 writers are affected by technology-related factors.

Considering that computer-assisted L2 writing studies were mostly conducted in the classroom of English as a second language (ESL) contexts (Park, 2012; Phinney, 1991; Phinney & Khouri, 1993; Yoon & Hirvela, 2004), more research on EFL writers' computer-assisted L2 writing beyond the classroom is required. The difference between ESL and EFL contexts and writers in each context should be considered in the research and pedagogy of L2 writing. In this era of technology, it is necessary to investigate what EFL writers can do with computer technology for their L2 writing in English out of the classroom. Such an investigation would be able to provide insights for designing methods to train EFL writers' L2 writing on computers so that they can become confident and independent L2 writers. A study is highly recommended that investigates EFL writers' multidimensional aspects with regard to their use of computer technology during L2 writing in English through multiple types of empirical data such as real-time observations of the L2 writing process and in-depth interviews to identify EFL writers' perception

related to L2 writing in English.

Furthermore, it is necessary to observe an individual EFL writer from various angles as L2 writing is affected by multiple variables, including the writer itself. Investigation of how EFL writers use technology in the course of L2 writing in English and how each online resource is utilized by EFL writers will help to discover the aspects of EFL writers' technology-incorporated L2 writing and the features and problems of using each online resource. Additionally, the effect of technological writing support on EFL writers should be widely explored by investigating EFL writers' perceptions, attitudes, and evaluations related to computer-assisted L2 writing.

It is suggested to observe EFL writers' use of a combination of several online resources in the course of L2 writing. Studies that investigated L2 writers' combined use of online resources such as online dictionaries, search engines, and corpora during L2 writing do exist (e.g., Lai & Chen, 2015; Lee, Lin, & Liou, 2006; Yoon, 2016a, 2016b), but not in large numbers. As these previous studies lacked L2 writers' extensive writing data, L2 writers' combined use of online resources during L2 writing was not fully researched and thus requires more investigations. Considering the good likelihood of L2 writers' use of more than one type of online resources during L2 writing, research on L2 writers' combined use of several online resources is desirable and necessary. The problem of the paucity of research on foreign language learners' hands-on uses of corpora in conjunction with other online resources such as search engines and dictionaries has been also criticized (Pérez-Paredes, Sánchez-Tornel, & Calero, 2012).

EFL writers' respective use of these online resources has also somewhat

been less investigated. Although the value of dictionary use in L2 writing is acknowledged (Christianson, 1997; Rundell, 1999), EFL writers' actual use of online dictionaries has not received much attention in the field of L2 writing research, which has subsequently led to a lack of extensive empirical and qualitative research on the topic. Considering the potential of search engines on the Web for assisting L2 writing, studies that explore EFL writers' use of search engines in their L2 writing are also surprisingly rare. The use of a corpus in the context of language teaching and learning has been discussed for the past thirty years (Flowerdew, 2012; Johns, 1986; Lenko-Szymanska & Boulton, 2015; O'Keeffe, McCarthy, & Carter, 2007), but EFL writers' direct and simultaneous use of corpora while they are writing in English has not often been studied. Most of the studies on the use of corpus in language education settings were conducted as a part of a classroom curriculum with restricted procedural conditions. Research on L2 learners' independent self-directed corpus consultation beyond the language classroom is required.

Applying the above research topics to Korean adult EFL writers in the context of independent L2 writing in English, the present study adopted a qualitative case study approach to investigate EFL writers' self-directed use of web-based online resources such as an online dictionary, a search engine, and a web-based large-scale corpus during extensive L2 writing tasks on a computer to elicit the L2 writers' use of the online resources. Korean adult EFL writers' computer-assisted L2 writing was explored by examining the aspects of the technology-incorporated L2 writing process and EFL writers' L2 writing-related characteristics.

## **1.2. Purpose of the Study**

The present study has the purpose of investigating the use of computer technology to assist L2 writing and its aspects observed in Korean adult EFL writers' independent L2 writing beyond the classroom context. The focus of the study is on Korean adult EFL writers' ways of using online resources in the L2 writing process and the characteristics of their L2 writing.

The present study was conducted with the following two objectives: 1) to obtain a detailed picture of an individual Korean adult EFL writer's actual use of a combination of online resources such as an online dictionary, a search engine, and a web corpus for the purpose of reference or consultation as an L2 writer's aids during the L2 writing process; and 2) to obtain information on how this individual Korean adult EFL writer perceived the use of online resources in writing in English. These objectives are based on the ultimate purpose of the present study, which is to obtain knowledge and understanding of how technology affects and transforms the L2 writing process and how the technology-incorporated writing process affects L2 writers. Two exploratory research questions are explored in this study:

1. How do Korean adult EFL writers use online resources in computer-assisted L2 writing in English?
2. How do Korean adult EFL writers perceive the use of online resources in their computer-assisted L2 writing in English?

The first research question investigates various aspects of Korean adult

EFL writers' independent self-directed use of online resources in their computer-assisted L2 writing in English so that a comprehensive picture of their computer-assisted L2 writing with the use of the online resources can be obtained. The second research question explores Korean adult EFL writers' perception and perspectives of computer-assisted L2 writing and use of online resources as L2 writing aids. While the first research question focuses on EFL writers' L2 writing behaviors observed in the course of L2 writing, the second research question focuses on EFL writers' beliefs, attitudes, and evaluation of computer-assisted L2 writing and use of online resources for L2 writing assistance.

### **1.3. Significance of the Study**

The present study is expected to provide insights into the field of L2 writing, computer-assisted L2 writing, and Korean adult EFL writers in terms of both theoretical and pedagogical perspectives. In the field of L2 writing, this study will enable us to identify various features and aspects of EFL writers' L2 writing in the era of technology. This will eventually lead to the design and development of effective and appropriate L2 writing pedagogy that incorporates present and future technologies as well as draws theoretical implications on L2 writing models and the role of technology in L2 writing.

The present study will be able to provide a detailed picture of computer-assisted L2 writing by showing individual Korean adult EFL writers' use of online resources, including an online dictionary, a search engine, and a corpus,

to solve their L2 writing problems when they write in English. In particular, what will be explored in the present study is the question of how each writer approaches their L2 writing problems by using online resources, what the writer discovers from the online resources, how the writer utilizes and applies the information found from the online resources to their L2 writing, and the limitations of the writer's self-directed independent use of the online resources in L2 writing. These findings will enable us to consider how computer-assisted L2 writing can be utilized and implemented in L2 writing pedagogy and what should be taught to EFL writers so that they can use these online resources effectively when performing English writing tasks. Considering online resources as self-reference and self-access tools (Chang, 2011, 2014; Lai & Chen, 2015; Lee, Lin, & Liou, 2006; Milton, 1997; Yoon, 2016b), this study evaluates and demonstrates the usefulness and limitations of online resources as L2 writers' aids. Furthermore, related skills and strategies that L2 writers want to equip themselves with (Charles, 2007, 2012) are identified from the study.

Information on how these online resources assist, support, and contribute to L2 writing will help stakeholders in the EFL learning context—for example, language learners, teachers, material writers, course designers, program developers, test makers, administrators, and school parents—make decisions on incorporating the use of online resources as a method to assist L2 writing. The answers to questions on what EFL writers can do for their L2 writing without external help or guidance from others and the minimal requirements or conditions to make L2 writers' self-directed use of online resources useful and effective are explored through the present study.

Focusing on an individual Korean adult EFL writer's real-time L2 writing process and related affective aspects with in-depth analyses of various types of data such as screen recording of the whole writing process and recording of the interview sessions, the characteristics of Korean adult EFL writers as L2 writers will be identified from the study. Korean adult EFL writers' perceptions and attitudes related to L2 writing in English and how they are affected by their use of computer technology in L2 writing will be explored. By examining EFL writers' L2 writing problems and their attempts to solve the problems through various approaches such as using online resources, L2 writing pedagogy in which the use of online resources assists Korean adult EFL writers' L2 writing in English and promotes their L2 writing ability can be designed and evaluated to determine the pedagogy's effects, feasibility, and pedagogical value. The present study may also provide supporting evidence for serendipitous discovery learning (Bernardini, 2000, 2002) or data-driven learning (DDL) in the course of Korean adult EFL writers' use of online resources during L2 writing.

The findings of the present study will contribute to improving current pedagogical practices related to L2 writing in the Korean EFL context by helping to arrive at better decisions and more effective pedagogy for struggling EFL writers who are in need of help and guidance from writing centers or resource centers, writing conferences with L2 writing teachers, and useful up-to-date technologies. This study will be able to present specific evidence and concrete cases of the use of online resources, and the study's findings will provide a deeper understanding of the multifarious aspects of L2 writing with respect to the technology-incorporated process. The findings will



also contribute to filling the gap in the research of EFL writers' direct use of online resources as L2 writing aids. By extension, the findings will enable us to predict the required features of future technological tools for L2 writing.

#### **1.4. Organization of the Dissertation**

This dissertation is organized as follows. Chapter 1 discusses the research background, purpose, and significance of the present study. Chapter 2 reviews the literature on L2 writing research by focusing on L2 writers and writing models and then reviews previous studies on computer-assisted L2 writing and web-based online resources. This is followed by discussion on the limitations of the previous studies and the research questions of the present study. After that, Chapter 3 presents the methodology of the study. From Chapter 4 to Chapter 6, each chapter presents each participant's case in terms of his or her use of online resources and perception of the use of the online resources in computer-assisted L2 writing. Chapter 7 discusses significant issues to consider based on the present study. Lastly, the dissertation concludes with pedagogical implications and suggestions for future research in Chapter 8.

## **CHAPTER 2**

### **LITERATURE REVIEW**

Chapter 2 reviews previous studies related to the present study and discusses the rationale for conducting the present research. Section 2.1 reviews the literature on L2 writing studies by focusing on L2 writers and L2 writing models. Section 2.2 reviews research on computer-assisted L2 writing and discusses web-based online resources for L2 writing assistance, including online dictionaries, search engines on the Web, and web-based corpora with corpus analysis tools. Based on the review of literature, Section 2.3 discusses the limitations of previous studies and the research questions guiding the present study.

#### **2.1. Research on Second Language Writing**

In this section, previous research on L2 writing is discussed with a focus on L2 writers and writing models. Based on the perspective of the writer-oriented approach to L2 writing, a number of significant variables within L2 writers are discussed, and then current writing models that explain writing process and writing-related factors are reviewed.

### **2.1.1. Research on Second Language Writers**

As an individual L2 writer is central to the act of L2 writing, identifying L2 writers' intrapersonal variables related to L2 writing is essential in understanding L2 writing. The variables within an L2 writer can be categorized as linguistic factors and non-linguistic factors: linguistic factors are divided into L2-related factors and L1-related factors, and non-linguistic factors are related to L2 writers' background and psychological aspects.

L2 writers' L2-related factors include L2 writing ability, L2 writing grammatical ability, L2 vocabulary ability, L2 writing strategy, and L2 proficiency. As a fundamental variable of an L2 writer, L2 writing ability is interrelated to and affected by an L2 proficiency level (Aliakbari, 2002), L2 writing grammatical ability (Flahive & Bailey, 1993) and L2 productive vocabulary (Ma & Wen, 1999). A number of studies revealed that L2 reading ability (Carrell & Connor, 1991; Flahive & Bailey, 1993; Lee, 2005) and L2 speaking ability (Ma & Wen, 1999) are also related to L2 writing ability. L2 writers' use of strategy is related to L2 proficiency level (Wolfersberger, 2003) and L2 context (Sasaki, 2004). More skilled L2 writers with a high level of L2 writing ability do more planning and revision (Hirose & Sasaki, 1994; Raimes, 1987; Skibniewski, 1988), and EFL writers use fewer writing strategies than ESL writers (Sasaki, 2004). Table 2.1 presents various strategies from the literature on language learning strategies related to the L2 writing process (Dörnyei, 1995; O'Malley & Chamot, 1990; O'Malley, Chamot, Stewner-Manzanares, Russo, & Küpper, 1985; Oxford, 1990). L2 writers may show such cognitive, metacognitive, and compensatory strategic behaviors in their L2 writing process.

Table 2.1. Learners' Strategies Related to L2 Writing Process

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Cognitive strategies

- Resourcing: using target language reference materials
- Translation: using L1 as a base for producing L2
- Using formulas and patterns: using memorized stock phrases
- Analyzing: deductive reasoning in analyzing expressions

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Metacognitive strategies

- Monitoring: reviewing production while it is occurring
- Evaluation: evaluating language production after it has taken place

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Compensatory strategies

- Circumlocution: describing or exemplifying the target object
- Approximation or using a synonym: using an alternative term that expresses the meaning of the target lexical item as closely as possible
- Avoidance: avoiding and selecting the topic, message abandonment

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Adapted from O'Malley et al. (1985, p. 582-584), Dörnyei (1995), Oxford (1990), O'Malley & Chamot (1990)

L2 writers' L1-related factors include L1 writing ability, L1 reading ability, and L1 transfer or influence. Whether L1 writing ability is related to L2 writing ability is not conclusive as the existing body of research shows positive, negative, and weak relationships between the two (Leki, Cumming, & Silva, 2008). L1 writing ability has a dual effect on L2 writing; it can contribute either positively or negatively to L2 writing. L1 writing ability is found to be a predictor of L2 writing ability (Ma & Wen, 1999) and L2 writing performance (Aliakbari, 2002; Pae, 2008), but a correlation between high L2 writing ability and low L1 writing ability is also found (Aliakbari, 2002). Along with L1 writing ability, L1 reading ability is found to be significantly correlated with L2 writing ability (Carson, Carrell, Silberstein, Kroll, &

Kuehn, 1990).

There are numerous studies that investigated L1 use or influence on L2 writing (Choi & Lee, 2006; Huh, 2001; Huh, Lee, & Lee, 2013; Kobayashi & Rinnert, 1992; Van Weijen, Van den Bergh, Rijlaarsdam, & Sanders, 2009; Wang & Wen, 2002). L2 writers are influenced by their L1, and L1 can be used in the course of L2 writing. As a result, L1 transfer appears in L2 writing texts and the L2 writing process (Hirose & Sasaki, 1994; Kobayashi, 1984). L1 transfer is related to low L2 proficiency and lack of L2 writing experience (Kubota, 1998). L2 writers' use of L1 in L2 writing process is seen as an unavoidable phenomenon, but sometimes, it is seen as a strategy (Choi & Lee, 2006; Huh, 2001). L2 writers' L1 to L2 translation in L2 writing (Huh, 2001; Hwang & Lee, 2011) is considered in this context. Translation can be beneficial to less skilled L2 writers (Kobayashi & Rinnert, 1992). However, L1 use during L2 writing is not always desirable as it can negatively affect L2 text quality (Van Weijen, Van den Bergh, Rijlaarsdam, & Sanders, 2009). It is known that L1 use or dependency in L2 writing declines with the development of writers' L2 proficiency, L2 writing experience, and L2 writing skill level (Leki, Cumming, & Silva, 2008).

L2 writers' non-linguistic factors that affect L2 writing include L2 writers' background (Mohan & Lo, 1985), L2 writing experience (Kubota, 1998), practice (Hirose & Sasaki, 1994; Sasaki, 2004), perception (Silva, 1992), and psychological factors located in L2 writers' affective dimensions such as self-efficacy (Bruning & Kauffman, 2016), attitude toward writing (Pae, 2008), confidence (Sasaki & Hirose, 1996), apprehension (Betancourt & Phinney, 1988; Cheng, 2002; Kim, 2006), and motivation (Sasaki, 2011). These non-

linguistic factors are often found to be related to linguistic factors. L2 writers' negative emotions such as L2 writing apprehension and frustration are related to a low level of L2 writing ability (Khaldieh, 2000; Skibniewski & Skibniewska, 1986).

These numerous L2 writer factors that can explain L2 writing phenomena help our understanding of L2 writers. Based on previous research findings and discussions, an L2 writing model that is explicable to current L2 writers should be established, and it should comprehensively include related factors. A previous study which focused on foreign language writers revealed EFL writers' use of fewer writing strategies, dependence on translation, and problems of limited vocabulary and limited L2 writing practice (Sasaki, 2004). The findings from the previous studies suggested that L2 writers need to develop their L2 grammatical and vocabulary ability to improve their L2 writing ability, and EFL writers should be able to employ appropriate L2 writing strategies when writing in English. EFL writers' effective use of L2 writing strategies could be promoted through practice and training, which would also provide L2 writers with useful L2 writing experience. Additionally, the positive utilization of L2 writers' translation from L1 to L2 and methods to deal with L2 writers' lack of L2 vocabulary in the L2 writing process (e.g., using resources or tools such as dictionaries) should be considered in L2 writing pedagogy.

### **2.1.2. Second Language Writing Models**

Coherent and comprehensive theories of L2 writing do not exist at present. Most L2 writing studies have devised L1 writing theories to explain and discuss L2 writing phenomena. Although the L1 writing process and L2 writing process share some common ground in a way, the prevalent assumption that places L1 writing and L2 writing in the same process model has been criticized (Silva, 1993). L1 writers and L2 writers may use different cognitive models and show different performance in writing tasks (Devine, Railey, & Boshoff, 1993). L2 writing needs to be comprehended beyond the framework of L1 writing theories to describe the unique nature of L2 writing and to adequately explain L2 writing phenomena. Considering the similarities and differences between the L1 writing process and L2 writing process, available writing models should be considered together to build a more robust and fundamental understanding of the writing process in both L1 and L2. In this section, currently available writing models presented by Hayes and Flower (1980), Flower and Hayes (1981), Hayes (1996), Chenoweth and Hayes (2001, 2003), and Wang and Wen (2002) are discussed.

Hayes and Flower's (1980) model has been an influential one from the cognitive viewpoint of the writing process (Grabe & Kaplan, 1996; Hayes, 1996). Flower and Hayes' (1981) model is a revised version of their previous model. Based on the analysis of a writing protocol, Flower and Hayes' two models display components of the writing process as planning, translating, reviewing, and monitoring. In Hayes' (1996) framework of writing, the social and physical environment of the writing task and the writer's motivation/affect, cognitive processes, working memory, and long-term

memory are included as components. Hayes kept developing and expanding his works on writing models with other researchers by presenting a model of written language production (Chenoweth & Hayes, 2001) and a model of text production (Chenoweth & Hayes, 2003). Unlike these writing models based on L1 writing process, Wang and Wen's (2002) L2 composing process model reflects L2 learners' use of L1 in the process of L2 writing; L1 is used when the learners manage the writing process and generate and organize ideas, and L2 is used when the learners undertake task-examining and text-generating activities.

Most of the writing models, however, do not reflect the role of external resources for writers, which can be utilized in the writing process. While a lack of consideration of writers' aids is found in most of the existing writing models, Chenoweth and Hayes' (2001) written language production model has "dictionaries" as a component of external factors in the process level. Their inclusion of writers' aids indicates that the consideration of writers' aids in the writing process is worthwhile. Besides dictionaries, style guides, computer interfaces, and spelling checkers were mentioned in Chenoweth and Hayes' discussion of external factors involved in the writing process.

Chenoweth and Hayes' (2003) text production model presents the core and fundamental stages involved in the process of writing. This model is obtained from an experimental study on adult native speakers of English; the participants wrote a summary of a series of cartoons on a word processor. Considering the writing tool used in the study, this model can be more explicable in the process of writing on the computer. The model presents the components of the writing process as the proposer, the translator, the



evaluator/reviser, and the transcriber. The proposer proposes ideas for expression and a general plan for writing; the linguistic or nonlinguistic form may be accessed from memory or from external sources, which may include writers' aids. The translator translates the proposed ideas into linguistic strings drawing on linguistic knowledge in long-term memory and working memory resources. The linguistic string goes through the evaluator/reviser, and the transcriber converts the accepted linguistic strings into text. Considering the electronic writing environment, this text production model provides insights on the candidate components of an L2 writing process model.

There should be an additional consideration of L1-related features in the L2 writing process. The role of L1 needs to be defined in an L2 writing model. A previous study shows that language switching can facilitate rather than inhibit L2 composing process (Qi, 1998), and L1 influence in L2 composition can be affected by a task effect (Lally, 2000). As Hayes (1996) proposed in his framework of writing, a writer's motivation and affect need to be considered along with the cognitive process, and the impact of extensive practice should be considered in developmental L2 writing models. Based on the existing cognitive writing models, a desirable L2 writing model should be able to reflect and explain current L2 writers' characteristics and components and features of the practical L2 writing process. On that point, the following section will discuss technology-related aspects of L2 writing on a computer.

## **2.2. Research on Second Language Writing with Computer Technology**

### **2.2.1. Research on Computer-Assisted Second Language Writing**

The innovation of computer technology in the late twentieth century brought revolutionary changes to human writing practices. Word processing technology drove such changes and evolved and spread in the 1990s along with personal computers. The word processor is one of the earliest computer technologies adapted by schools and language teachers as a significant tool for language teaching and learning (Hanson-Smith, 2001; MacArthur, 2006). In the 1980s and 1990s, investigation of writing in connection with the use of a word processor and a computer newly emerged among writing researchers (Hawisher, 1988; Pennington, 1996b).

Computer technologies can facilitate the means by which L2 writing is produced. The features of word-processing change writing habits such as cutting and pasting, copying and deleting, and checking spelling and grammar (Hyland, 2002) and provide a new way to replicate, manipulate, and store texts (Dickinson, 2006; Lunsford, 2006). A word processor allows easy revision and multiple drafts, and spell-checking can teach spelling by raising students' awareness levels (Hanson-Smith, 2001). The control function of a word processor over the composing process can provide writers with opportunities to explore diverse writing strategies such as generating, developing, and organizing ideas and revising (Milton, 1997).

Studies on L2 writing pedagogy noted the impact of a word processor on L2 learners and L2 writing within the impact of computer technologies on L2

writing (Hyland, 2003; Leki, Cumming, & Silva, 2008; MacArthur, 2006; Milton, 1997; Pennington, 1991, 1993, 1996a, 1996b, 2003; Phinney & Khouri, 1993; Poulsen, 1991; Stapleton & Radia, 2010). In these studies, computers and word processors are known to assist the writing process in various ways such as by enabling revisions and checking spelling and grammar (Pennington, 1991; Stapleton & Radia, 2010), producing longer text and motivating writing (Pennington, 1991), and improving L2 students' attitudes and confidence about writing (Pennington, 1993). Additionally, writing on the computer using a word processor software was viewed as properly fitting into cognitive writing process theories because they can guide learners to write step by step from a process approach (MacArthur, 2006; Miller & Knowles, 1997). Along with the development of digital writing tools and online writing environments, their positive impact on students' perceptions of writing and writing itself was also investigated (Nobles & Paganucci, 2015).

Computer environments are evaluated to provide supportive tools and resources for individual writing development such as spelling and style checkers, dictionaries, and self-evaluation feedback (Dickenson, 2006; Leki, Cumming, & Silva, 2008). Concordance programs are useful to provide many examples of usage and opportunities to compare them with L2 writing, and grammatical advice and sophisticated translation suggestions can be more properly used for advanced writers with caution (Hanson-Smith, 2001). A computer's potentials for L2 writers includes increased writing efficiency, increased motivation, increased amounts of writing, more effective use of language, and expanded access to writing resources and information

(Pennington, 2003). These advantages and the effectiveness of using computer technologies, however, should be critically appreciated for pedagogical purposes, treatment, and methods (Hyland, 2003; MacArthur, 2006). A word processor is an important tool for writers but cannot teach them how to write (Hult, 1988). The relationship between computers and pedagogy is explained as “Computers do not represent a method but can be used to support a variety of methods” (Hyland, 2003, p. 172).

The use of writers’ aids based on computer technologies such as spelling checkers, speech synthesis, word prediction, and speech recognition shows mixed results in terms of effectiveness and improvement, and thus an investigation of what particular tools are the most advantageous to a particular student group is suggested (MacArthur, 2006). Furthermore, it is necessary to consider L2 writers’ unique needs in the use of computer technologies that support writing (Meurers, 2013); writers’ aids for L2 writers should provide more feedback and concordance views of alternatives to support L2 writers’ understanding of the alternatives and choice of the right option.

Researchers adopted a case study approach to investigate computer-assisted L2 writing. New (1999) investigated five foreign language learners’ writing strategies and habits in the revision process in computer-aided writing through software resources. Hirvela (2005) investigated two Korean college students’ writing across the discipline by examining their writing practices on writing assignments over the course of a semester in the ESL context; the findings implied that further instructions in digital writing would be beneficial to L2 writers. Stapleton (2010) examined an L2 university student’s composing processes by focusing on time allotment to composing behaviors

when writing on a computer. The results suggested that L2 writer's use of cognitive resources in an electronic environment may be different from the context of using a pen and paper. These studies examined L2 writing qualitatively with a quantitative analysis.

Computer technologies also affect the writing assessment (Hunsu, 2015; Sullivan & Lindgren, 2002; Weigle, 2002). The computer interface is used as a writing tool, a test set, or a venue for L2 writing tests as seen in the computer-based TOEFL and the TOEFL iBT test delivered via the Internet. Advanced technologies are also applied to the ways of scoring and assessing L2 writing, as seen in automated essay scoring technology (Shermis & Burstein, 2003). The impact of new technologies on L2 writing assessment should be noted as it can bring substantial changes to defining how to assess L2 writing and how to design L2 writing tests. Considering the effect of modern computer technologies on L2 writing, new technological tools for L2 writing and assisting L2 writing need to be carefully examined and evaluated in terms of its role and effect in the L2 writing process. On that point, studies of web-based online resources that can function as L2 writers' aids to support L2 writing will be discussed in the following section.

### **2.2.2. Web-based Online Resources as L2 Writers' Aids**

The World Wide Web provides easy-to-access resources that can be utilized for writers' reference or consultation. Writers' aids such as dictionaries, grammars, and translation aids are available online nowadays, and observations regarding the phraseology and use of individual words through lexically sensitive grammar checkers and online thesauruses can be made

available to writers (Hunston, 2002). In addition, online translators can be used in composing if used properly even with its limitations (Stapleton & Radia, 2010). The Internet has the potential of being used as a source of language data for analysis of authentic language. The text available on the Web can be easily collected to build language corpora to analyze, and a database of authentic writing of a specific genre can provide insights into written genres, features of written languages, and patterns of languages that can be salient to L2 writers (Hyland, 2003). Such an informant role of computers and the Internet helps L2 writers see how language is typically used in particular contexts. This section reviews research on L2 writing using three kinds of online resources on the Web: online dictionaries, search engines on the Web, and corpora.

#### **2.2.2.1. Online Dictionary**

Dictionaries, basic reference materials for writers and language learners, are now available online; bilingual dictionaries and learner's dictionaries are easily and quickly accessible for free on the Web. The emergence and development of online dictionaries are the result of an evolving lexicography influenced by computer technology. Before online dictionaries were available, dictionaries in the form of a handheld electronic devices and computer-based interactive multimedia technology (e.g., CD-ROMs) were pedagogically examined (Nesi, 1999). However, L2 writers' dictionary use in L2 writing has not been extensively studied considering its significance as writers' aids, and an in-depth investigation of L2 writers' use of online dictionaries has rarely been conducted.

Some studies found that L2 writers' use of a bilingual dictionary can lead to errors in lexical choice (Leki, Cumming, & Silva, 2008). A study of Japanese EFL college students' use of a paper dictionary found students' incorrect use of words in the dictionary, and L2 proficiency was not a decisive factor for successful dictionary use (Christianson, 1997); such results indicate that foreign language learners need help in using dictionaries effectively. A study of L2 writers' compensation strategies to solve lexical problems arising from dictionary entry words (Chon, 2007b) suggested that L2 writers need meaningful activities to develop strategies in using dictionaries.

In case of Korean EFL college students, their use of print and online dictionaries was investigated through questionnaires and semi-structured interviews (Chun, 2004); although this study has the limitation of not eliciting L2 writers' actual use of both types of dictionaries, the results showed that online Korean-English bilingual dictionaries were popular and preferred because of the easy access to the Internet. Additionally, the necessity of promoting the productive use of dictionaries was discussed to solve L2 writers' lexical problems. Korean EFL university students' L2 lexical problems in the L2 writing process were identified in another study that L2 writers wrote in English on a word processor with access to dictionaries on the Internet (Chon, 2007a). This study discussed the pedagogical implications of helping L2 writers solve lexical problems in contexts where word processors and online dictionaries are used as a medium.

Studies that investigate EFL writers' use of online dictionaries along with other online resources for reference in L2 writing are rarely found (Lai & Chen, 2015; Lee, Lin, & Liou, 2006). A study that identified the purpose of

EFL writers' use of online dictionaries and corpora (Lai & Chen, 2015) asserted that example sentences from dictionaries and corpora play a crucial role in EFL writing as they provide sentence structures and allow writers to see how a word is used in context. The example sentences retrieved from corpora compensate for the limited number of examples found in the online dictionary. The bilingual feature of a reference tool is also an important consideration for L2 writers; this study presents evidence of EFL writers' use of L1 during the L2 writing process and of whether a writing tool is in a bilingual form matters to the writers.

Another study (Lee, Lin, & Liou, 2006) investigated Chinese college students' production of English in writing and translation tasks with scaffolds of three online bilingual referencing tools: a dictionary, concordancer, and collocation tool. This study examined students' looking-up behaviors and idiosyncratic individual preferences of tools through look-up records generated by a computer program, questionnaire, and think-aloud data. The results showed that students' frequent cross-referencing was due to the different types of linguistic information each tool provides, and the three referencing tools successfully assisted students in L1 to L2 translation, hypotheses confirmation, and spell checking. The problems and difficulties in using the reference tools in productive tasks were mainly caused by students' unfamiliarity with the functions of the tools, a lack of searching techniques, the small size of the corpus yielding limited search output, over-reliance on tools without application of one's own judgments, and carelessness leading to input of misspelt search words. The students were satisfied with the use of corpus tools for references, and the need for students



to acquire mature look-up skills was discussed.

In the absence of references such as dictionaries, grammars, or usage books, L2 writers face difficulties in expressing their meaning; thus, they use strategies like approximation, circumlocution, generalization, and avoidance to overcome the gap between their current linguistic resources and the skills demanded to complete a task (Rundell, 1999). When L2 writers are provided with referential resources as writers' aids, L2 writers' writing strategies can be changed. Along with an examination of L2 writers' actual use of online dictionaries and other online resources, the strategies adopted in the process of L2 writing in terms of writing techniques and referencing techniques can be meaningfully investigated.

#### **2.2.2.2. Search Engine on the Web**

The World Wide Web is a useful tool to motivate language learners (Fletcher, 2013). The Web has excellent accessibility and wide availability at minimal cost. It can be approached as a dynamic corpus by direct access to it, which reflects real-time current usage and emerging usage; this is what major search engines can do. The Web makes it easy to acquire computerized text in modern written language; commercial search engines like Google play the role of a gatekeeper of the Web so that the Web can be accessed as a linguistic database (Fletcher, 2013). The relation between the Web and a corpus can be described as using the Web for corpus and using the Web itself as a corpus (Fletcher, 2013; Gatto, 2014). The Web-as-corpus approach is possible through search engines, which has been explored as a tool to use the Internet as a source of language data. For example, the use of search engines to help

students find typical collocations and grammatical or rhetorical items on the Internet has been discussed (Hanson-Smith, 2001).

The use of search engines on the Web for reference purposes in L2 writing is rarely found in L2 writing research. A paucity of studies of L2 learners' use of corpora with other online resources such as Google and dictionaries has been pointed out (Pérez-Paredes, Sánchez-Tornel, & Calero, 2012). Considering the growth and wealth of studies that investigated the use of corpora in L2 learning, it is necessary to examine how L2 learners use corpus resources in the context of other co-existing online resources like Google and online dictionaries. In a study of EFL university students' focus-on-form writing activities involving English cleft sentences (Pérez-Paredes, Sánchez-Tornel, & Calero, 2012), the Google search engine was used in conjunction with a set of corpora including the British National Corpus (BNC) and dictionaries. The study revealed the learners' mixed search patterns and identified query types with corpus and Google and other online resources.

The Google Web search site was used in the program developed for EFL students in Hong Kong (Milton, 2006). The program was installed as a word processor toolbar and helped learners' access to languages in online resources as they composed and proofread. The program also included online dictionaries and an online concordancer based on a discovery-based approach to writing that integrates concordancing software into the writing process. Such an approach was "the means to check and improve their language by referring to copious, authentic, and comprehensible resources during the writing process" (Milton, 2006, p. 125). Milton (2006) criticized the lack of a system to assist students' self-edit so that they can be independent and

effective writers with confidence. Considering that the Web search may present the nonstandard usage due to its unrestricted access, it is necessary to teach students to be thoughtful researchers that can critically evaluate the search results by exercising judgment. He also suggested the benefit of using the Web as it can help students “experience language as a spectrum of possibilities” (p. 127) beyond a dichotomous view of correct and incorrect use of language.

In other studies, Google’s custom search engine was used in the study of ESL undergraduate students’ composing process (Park & Kinginger, 2010), and the use of Google was allowed in the natural setting of EFL graduate students’ academic writing in English (Chang, 2011). Considering the advantages of accessibility and availability of search engines on the Web, it is necessary to explore L2 writers’ actual use of a search engine as a tool to assist their L2 writing in greater depth.

### **2.2.2.3. Corpus**

The development of computer technologies and the advent of the Internet led to the subsequent development of corpora and related technologies used to analyze them. Corpora and concordancing were exclusively used by experts of academic areas such as lexicography and computational linguistics (Johns, 1986), but this has been gradually changing during the last thirty years. There has been more penetration of the use of corpus and concordance technologies in the language learning research environment, where it has been used for pedagogical purposes (Bennett, 2010; J. Flowerdew, 1996; L. Flowerdew, 2012; Hidalgo, Quereda, & Santana, 2007; O’Keeffe, McCarthy,

& Carter, 2007; Reppen, 2010; Tribble & Jones, 1990). In the early stage, corpora were mainly used as a resource for teachers or material designers in language education settings (Gavioli & Aston, 2001; Lee, Shin, & Chon, 2009). It has not been long that corpus and concordancing tools have become available to language learners as resources for language learning and as writing aids. On that point, studies that investigate L2 learners' actual use of corpus for language learning purposes and writing aids are appreciated.

Corpus consultation has been theorized in the framework of data-driven learning (DDL) (Johns, 1986, 1990) and appreciated for its potential to affect learners' L2 learning and usability in L2 pedagogy in broader contexts beyond L2 writing. Awareness raising from corpus-based observation (Boulton, 2010b), inductive learning, and learner autonomy enhancement are discussed as the underlying constructs of DDL, and thus the corpus plays a significant role in DDL as a valuable language resource to provide target language input to language learners. Several studies explored the effects of DDL in language learning and gave positive evaluations of the approach from learners' perspectives (Götz & Mukherjee, 2006; Lee, 2013; Varley, 2009; Yoon & Hirvela, 2004) and better learning effect on the learning of lexical features (Cobb, 1997; Cresswell, 2007; Geluso & Yamaguchi, 2014; Sun & Wang, 2003). In the process of DDL, language learners are required to play a more active role in conducting the procedures. Previous studies present a variety of metaphors for the role of learners in DDL: researcher (Johns, 1990), traveler (Bernardini, 2004), chef (Kennedy & Miceli, 2010), multiplayer (Hong, 2012), and language detective (Yoon & Jo, 2014). The serendipitous aspect of discovery learning occurring in the process of DDL realized by corpus

consultation provides learners with language input to explore ways of promoting learner autonomy in language learning (Bernardini, 2000, 2002). A study that examined learners' approaches to corpus investigation using a web-based corpus identified four steps of investigation: formulating the question, devising a search strategy for the given question, observing the data and selecting examples, and drawing a conclusion (Kennedy & Miceli, 2001).

In relation to the DDL approach to language learning, researchers generally appreciated the value of the learners' direct access to and use of corpora while they were engaging in language learning activities or language-related tasks such as L2 writing (Bernardini, 2000; Cheng, Warren, & Xun-feng, 2003; Gavioli & Aston, 2001; Johns, 2002; Lee, Shin, & Chon, 2009; McEnery & Wilson, 1997; Römer, 2012; Stevens, 1991; Varley, 2009; Yoon & Hirvela, 2004). Previous studies show L2 writers' proofreading using web-based concordancers (Sun, 2003), self-correction on errors (Feng, 2014; Gaskell & Cobb, 2004; Papp, 2007; Todd, 2001; Yoon & Jo, 2014), and composition revision (Tono, Satake, & Miura, 2014). These methods are mostly focused on correcting errors in a sentence or in the first draft. Online corpora in the redrafting stages are useful in the writing process as they can provide feedback on sentence-level errors so that learners correct the errors autonomously (Gilmore, 2009). L2 writers can be trained to use reference corpora as a self-correction tool using the corpus-integrated writing process, which incorporates revision using a corpus, teachers' indirect feedback, and one-to-one teacher-student consultations (Quinn, 2015).

Most of the studies that explored the potentials of corpora as reference resources and tools for L2 writing were conducted as a part of a classroom

curriculum at university under teachers' guidance in the context of English for academic purposes (EAP) (Chang, 2011, 2014; Charles, 2007, 2011, 2012; Hafner & Candlin, 2007; Park, 2012; Sun, 2007; Yoon, 2008). The foci was investigated of the studies that examined L2 writers' use of corpus vary from L2 writers' evaluations and perceptions of using a corpus and a concordancing tool in their L2 writing (Chambers, 2005; Granath, 2009; O'Sullivan & Chambers, 2006; Sun, 2007; Varley, 2009; Yoon & Hirvela, 2004) to L2 writers' actual use of corpora under different conditions such as guided vs. non-guided consultation and indirect vs. direct use (Pérez-Paredes, Sánchez-Tornel, Calero, & Jiménez, 2011; Yoon & Jo, 2014). Some of these studies did not allow dictionary use in the L2 writing process in order to elicit the use of corpus only (Tono, Satake, & Miura, 2014; Yoon & Jo, 2014). Whether a dictionary is used alongside a corpus in L2 writing is worthy to be investigated as it can provide meaningful information that can weigh the effect of corpus use in L2 writing in a different way.

The role of corpus consultation literacy is appreciated for developing learners' cognitive abilities, fostering metacognitive knowledge, and facilitating independent learning (O'Sullivan, 2007). Advanced L2 learners' writing skills can be enhanced by corpus consultation, which involves not only correcting basic errors but also other areas such as lexico-grammatical patterning (Chambers & O'Sullivan, 2004). In the case study of three learners' corpus-assisted creative writing in the context of using a corpus as a reference resource (Kennedy & Miceli, 2010), corpora provided learners with an aid to achieve accuracy of linguistic rules and to inspire creativity and the imagination. This study emphasized L2 writers' corpus apprenticeship in

developing corpus consultation literacy as delineated by the metaphor of “learner as chef”: “[a]n apprentice chef expects to develop expertise from recipes and observation of master chefs’ manipulations of ingredients and their outcomes, and seeks—from both sources—not only rules but stimuli to creativity” (Kennedy & Miceli, 2010, p. 42). An apprenticeship for development of L2 writers’ corpus research skills is a way to make the most of corpora and to enhance L2 writers’ capabilities with other reference tools and language learning (Kennedy & Miceli, 2001).

Among the use of corpora as help for writers, parallel corpora was proposed as being useful for writers to find possible translations of given terms (Hunston, 2002); corpus evidence can identify typical and atypical phraseologies that guide the most appropriate use of language. As an easily accessible online resource that provides rich and authentic lexicogrammatical information explicitly, using online corpora for L2 writing can enhance the appearance of native-like fluency, and effective search strategies can support L2 writing (Franken, 2014). Although existing studies provide findings and evidence that support corpora’s usefulness and noteworthy potentials as reference resources and language learning for L2 writing, how learners access online corpus-based resources and make use of them and how they perceive and evaluate the online corpus-based resources need to be investigated further (Franken, 2014). L2 writers’ use of online corpora in conjunction with other online resources as L2 writing aids should be explored as well.

## **2.3. Limitations of Previous Studies**

One of the research questions to be studied with L2 learners' digital writing is how L2 writers compose text with various writing technologies, including digital writing technologies (De Pew, 2005). Previous studies on computer-assisted L2 writing, particularly focusing on the use of online resources as L2 writing aids, have a number of limitations in terms of the following aspects.

First, there is a lack of extensive L2 writing studies that reflect L2 writers' direct use of currently available up-to-date technologies to assist their L2 writing, such as online dictionaries, search engines, and corpora with analysis tools. Considering that the omission of the role of dictionaries in the writing process in general L2 writing theories has been criticized (Christianson, 1997), an in-depth study of L2 writers' use of online dictionaries is hardly found. The active use of search engines for L2 writing is under-researched so far compared with the literature on the use of corpora in L2 writing. Previous studies show a scarce application of easily accessible online resources available on the Web for free to L2 writing process as writers' aids. In addition, the research of L2 writers' simultaneous use of a combination of online resources to support their L2 writing is scanty.

Another research gap resides in the investigation of L2 writers' use of writers' aids in the framework of a cognitive writing process model. Considering that the role of writing aids in the writing process is not adequately explained by existing writing models, a study of L2 writers' use of online resources based on the process model of writing is hardly found. The use of online resources in the writing process needs to be examined with



the broader context and procedures in the whole process of writing and the related factors involved in the process.

Third, most of these studies were conducted in the classroom setting under a teacher's guide and intervention. L2 writers' independent use of online resources beyond the classroom is rather unknown. The use of corpora outside the classroom is presented as the next important agenda in the research of L2 writers' corpus consultation (Chambers, 2007). This missing part shows a significant imbalance between research of language learning in class and language learning beyond the classroom. In terms of fostering learners' autonomy and life-long learning (Boulton, 2010a), L2 learners' computerized self-access opportunities for development of writing skills can be connected and further applied to independent self-directed L2 learning in L2 writing (Bloom, 2008; Milton, 1997). Additionally, the writing-to-learn-language approach can be especially considered in the context of learning a foreign language (Manchón, 2013).

The fourth limitation is related to data. Most of the studies collected a one-off type of data in experimental settings for a short term. The data were lacking in intensity and extensiveness. Various types of data should be collected to understand the L2 writing phenomenon in the context of the computer-assisted writing environment. Considering these limitations, the present study attempted process-oriented research with an intensive and extensive dataset.

This study investigates multifaceted aspects of Korean adult EFL writers' self-directed use of online resources in their L2 writing; it is guided by the following exploratory research questions:

1. How do Korean adult EFL writers use online resources in computer-assisted L2 writing in English?
2. How do Korean adult EFL writers perceive the use of online resources in their computer-assisted L2 writing in English?

The first research question investigates Korean adult EFL writers' actual use of a combination of online resources when writing in the English language. In pursuit of this purpose, the individual writer's use of each resource is examined qualitatively in addition to being analyzed quantitatively. The issue of how Korean adult EFL writers' writing processes incorporate online resource use will be investigated and discussed through the first research questions. The findings will provide evidence-based knowledge to our understanding of EFL writing processes that incorporate modern web technologies. Furthermore, the new knowledge will enable us to evaluate how web-based resources can assist EFL writers to solve their L2 English writing problems and to overcome writing difficulties so that writing capability and independent performance of L2 English writing is enhanced.

The second research question aims to discover the Korean adult EFL writers' perceptions underlying their use of online resources in the process of writing in English. EFL writers' thoughts, attitudes, and evaluations regarding the use of online resources in their L2 writing will be explored by this second research question. This component investigates the writer's use of online resources, including the effects of using online resources in EFL writers' L2 English-writing processes and the influence of online resources on EFL writers' psychological aspects. The findings will provide insights to our

understanding of what happens in EFL writers' minds due to their use of online resources and, further, to assist in making pedagogical decisions given EFL writers' psychological characteristics as related to L2 English writing.

Given that these research questions require an in-depth investigation of an individual EFL writer's use of online resources during the process of L2 English writing, a case study approach based on a qualitative research perspective was adopted for the study. A case study is a qualitative and interpretive approach to understanding the experiences, features, behaviors, and processes of a limited unit of experience. In-depth characterization of individual entities within context for a particular case study provides grounded new understandings of selected issues (Duff & Anderson, 2016). In the present study, the cases are three Korean adult EFL writers who performed L2 writing in English on the computer utilizing online Web resources. Each case is comprised of extensive writing tasks during a period of data collection so that each can be examined by way of sufficient elicited data to investigate writing process and by the use of online resources in the writing process.

## **CHAPTER 3**

### **METHODOLOGY**

Chapter 3 presents the methodology of the present study. The chapter begins with information about the participants—Section 3.1. In Section 3.2, the online resources and writing prompts used in the study are presented. Section 3.3 gives a description of the tasks that the participants performed in the study. Section 3.4 describes settings of the study, data collecting procedures, and data transcription. The chapter ends with Section 3.5, a discussion of data analysis methods.

#### **3.1. Participants**

As a result of recruiting participants by convenience sampling, three Korean adult EFL writers, Ara, Yuna, and Joon voluntarily participated in the study.<sup>1</sup> The participants were by chance all graduate students in doctoral programs. They had been through K-12 in the Korean EFL context and were studying in differing doctoral programs at different universities in Seoul, Korea. As graduate students, all of them had practical needs for writing in English, especially for academic purposes. The participants' general background information is presented in Table 3.1.

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<sup>1</sup> Pseudonyms are used to protect the participants' anonymity.

Table 3.1. Background Information of the Participants

Name	Age	Gender	Major in a doctoral program / English Proficiency Level
Ara	30	Female	Business marketing / TOEIC 880, VTS 358/379*
Yuna	31	Female	Environmental engineering / TOEIC 750, VTS 413/450*
Joon	29	Male	Biomedical science / TOEIC 750, VTS 223/235*

\*Vocabulary Test Score before the main sessions/after the main sessions

The participants' English proficiencies were estimated by the participants' self-reported TOEIC scores and the results from a set of five vocabulary tests. These tests were conducted before and after the main sessions in order to obtain information related to the participants' vocabulary as a component of English ability. L2 productive vocabulary is known to be related to L2 writing ability from a previous study (Ma & Wen, 1999). The set of vocabulary tests used in the study includes frequency-based receptive and productive vocabulary tests provided by Thomas Cobb at Université du Québec à Montréal on his website.<sup>2</sup> Detailed information of each test is presented in Table 3.2. A total of 610 vocabulary items were tested through five vocabulary tests, and the vocabulary test scores constitute the number of correctly answered vocabulary items. The vocabulary test scores of Table 3.1 indicate the total sum of the five vocabulary test scores, and the participants'

<sup>2</sup> Cobb, T. *Frequency Based Vocabulary Tests*. Accessed 1 December 2015 at <http://www.lexutor.ca/tests/>

scores for each test are presented in Table 3.3.

Table 3.2. Vocabulary Test Information

Frequency based tests (Receptive): Test 1, 2, 3, 4		
Frequency based tests (Productive): Test 5		
Test #	Type of vocabulary test	Number of items
1	Vocabulary Level Test 2k-10k (Nation, 1990)	30 questions for 90 vocabulary items
2	Vocabulary Level Test 2k-10k (Schmitt, Schmitt, & Clapham, 2001)	50 questions for 150 vocabulary items
3	Size Test, 1-14k (Nation & Beglar, 2007)	140 questions for 140 vocabulary items
4	Phrase Test, 1-5k (Martinez, 2011)	50 questions for 50 vocabulary items
5	Version A and Version B (Laufer & Nation, 1999)	180 questions for 180 vocabulary items

Table 3.3. The Participants' Vocabulary Test Scores for Each Test

Participant (Pre/Post)	TEST 1 (90)	TEST 2 (150)	TEST 3 (140)	TEST 4 (50)	TEST 5 (180)
<i>Ara</i>					
- Pretest	70	114	86	29	59
- Posttest	74	122	86	28	69
<i>Yuna</i>					
- Pretest	78	139	73	36	87
- Posttest	78	130	118	36	88
<i>Joon</i>					
- Pretest	56	90	47	21	9
- Posttest	59	91	52	26	7

Possessing significant intrinsic and extrinsic motivation to improve their English writing ability, these participants were all aware of their limited writing ability in English with little experience writing in English at the beginning of participation in the study. Writing in English had typically been

burdensome, and they considered themselves inadequate to meet their needs in English writing. Considering their strong aspirations to foster their own English writing capability and to be equipped with proper professional academic writing skills, these participants were regarded as somewhat highly motivated L2 learners of English in the Korean context. The profile for each study participant follows:

Ara started to learn English when she was a first grader at middle school. Her experience of staying in an English-speaking country was only a five-week trip to the United States. Besides English, Ara speaks French, having lived in France for seven years to finish her undergraduate studies and to earn a master's degree in business administration. At the time of participating in the study, she reported that her daily exposure to English on weekdays usually consisted of reading research articles written in English for roughly three hours a day, which is counted here as 15 hours a week.

Her goal of learning English is having a great command of English in writing and speaking for communication, and more specifically writing well for business e-mail and being able to write research article abstracts. According to her report, she thought her difficulties in writing or speaking English were caused by her limited English vocabulary; the use of appropriate vocabulary within context in terms of naturalness as judged by a native English speaker has been challenging to her.

Yuna started to learn English when she was nine years old, a third-grader in elementary school. She has been to English-speaking countries (the United States and the United Kingdom) for travel and education, respectively. In the U.S., the total period of staying for travel was a month, and she stayed for

four months as an exchange graduate student when she studied for a master's degree in material engineering in Korea. In the U.K., she had a month of language study when she was a sixth grader in elementary school, and she traveled several times for three weeks total.

Yuna does not speak foreign languages other than English. She reported her exposure to English on weekdays as two to three hours a day, which equals up to ten hours a week. Yuna's goal in learning English is to be able to write and speak without difficulty in her situation of constant demand for writing and speaking in English. This is primarily within the academic context, such as writing a research article, a script for a presentation at conference, a statement of research purpose, and also sharpening the applications and speaking skills needed for doing a presentation and participating in discussion at a conference. Yuna considered her difficulties in English to be derived from the absence of proper environmental conditions, classes, and methods to satisfy her needs in writing and speaking in English as related to her learning goals. She reported that she has not properly learned or studied English since she graduated from high school. She also stated that she attended private language institutes from time to time for test preparation, which she evaluated as limited and insufficient to meet her needs.

Joon started to learn English when he was a first grader at middle school. He has never been to English-speaking countries. He does not speak any other foreign languages besides English, even though he had learned Japanese when he was in his first year of high school. Regarding daily exposure to English, he reported that he was using English for reading and studying research articles or books for 10 hours a day. His goals in learning English



include being equipped with communication skills and academic skills in English so that he is able to write research articles in English as well as to speak English without inconvenience when he travels abroad. Joon reported his difficulties in English were because of his limited vocabulary and productive skills.

None of these participants had sufficient experience writing in English considering their educational experiences in the Korean EFL context. The participants' previous experiences in writing in English were scant and limited. Joon reported that his previous English writing experience had been scarcely any at all while Ara and Yuna also reported a lack of extensive experiences in English writing. They were able to type in English comfortably on computer and were accustomed to using the Internet on computer.

Regarding the online resources used in the study, the participants had used the Naver English Dictionary (NED) and Google but had not used The Corpus of Contemporary American English (COCA) before participating in the study. NED is an online dictionary service provided by Naver, which is the largest search portal website in Korea.<sup>3</sup> The participants were familiar with using NED and Google, but COCA was totally new to them. The following section will present these three online resources in detail along with information about the writing prompts used in the study.

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<sup>3</sup> <http://www.navercorp.com/en/service/naver.nhn>

## **3.2. Materials**

The above participants used online resources in their English compositions while they participated in the study. In this section, the online resources that the participants made use of while engaging in L2 writing in English are presented, and writing prompts that were provided to the participants are described.

### **3.2.1. Online Resources**

The online resources used in the study are an online dictionary, a search engine, and a corpus. These three types of online resources are easy to access and available for free on the Internet. These online resources were provided through a Web browser such as Internet Explorer or Google Chrome. The website of each resource was loaded on each tab of the browser; there were three available tabs on the browser while the writing session was proceeding. The participants used these resources as writing aids for reference and consultation to solve their L2 writing problems or difficulties when they performed writing tasks. The details regarding each specific online resource are presented next.

#### **3.2.1.1. Online Dictionary**

The online dictionary used in the present study was the Naver English Dictionary (NED) ([endic.naver.com](http://endic.naver.com)). Figure 3.1 shows the interface of NED. It was chosen due to its functions and the participants' familiarity with it. NED comprises the database for 91 dictionaries of several publishing

companies; the representative database is Oxford Advanced Learner's English-Korean Dictionary (Naver, 2011). It offers various user-friendly dictionary functions in a Korean-English bilingual environment. The search functions operate in a predictive way, which allows users to find a target search word and its meaning easily when typing a search word in Korean or English into the search box. The specific search function can be used with users' partial knowledge of a search word so that users can find a target word based on the selected condition; it can be used on a pop-up window for specific searches, or users can type a wild card directly into the search box. The system can suggest a correctly spelled word choice when users type an incorrectly spelled search word.

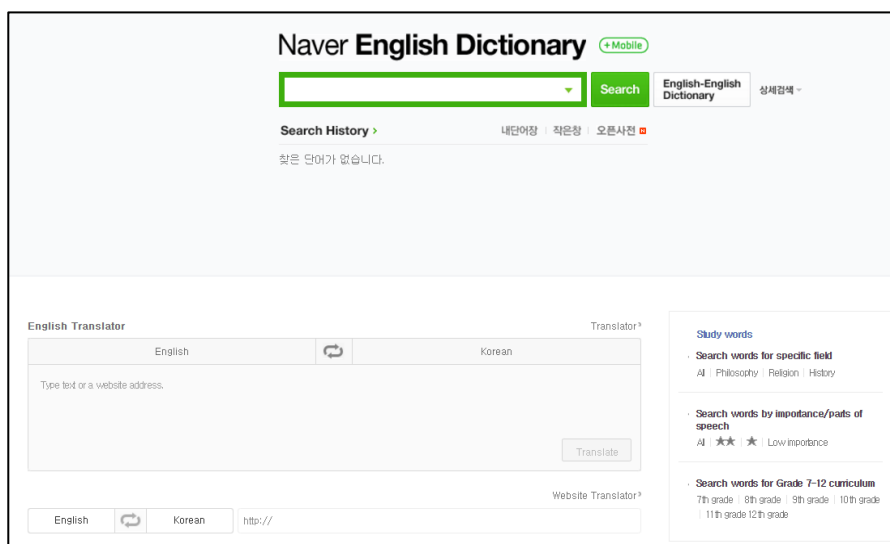


Figure 3.1. The Interface of Naver English Dictionary (April 22, 2016)

The search results provide a set of information such as a list of related searches extracted from the analysis of various search words and content

searches from many users (Naver, 2016), an entry of a word with a list of definitions, related phrases including a search word or a search phrase, and example sentences with Korean translations. A beta version of an interactive translator is also provided as one of the search functions. Each entry displayed in the search result page is in hypertext so that users can move to the other webpages of related information just by clicking the entry.

### **3.2.1.2. Search Engine**

Google ([www.google.com](http://www.google.com)) was used as a search engine in the study. Google is a globally well-known commercial search engine. Using Google is identified with the use of the Web as a corpus. When a user does a Google search, this means he is searching Google's index of the Web. The size of Google's index is over one-hundred million gigabytes.<sup>4</sup> Google provides search results based on its own index produced by web crawling software that fetches all the linked webpages; the search results thus present webpages that include a user's search terms.

Users can use search operators to get more specific search results. If a search word or phrase is enclosed in double quotation marks, the results will only show pages with exact matches to the quoted material; this is useful when looking for an exact word or phrase. An asterisk can function as a placeholder for any unknown or wildcard terms so that one can find an appropriate word or phrase in the given expressions. Advanced search

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<sup>4</sup> <https://www.google.com/intl/ko/insidesearch/howsearchworks/crawling-indexing.html>

provides narrowed down search results by using filters. The search box has a predictive function so that a user can find a target search term or related search terms while typing in key words.

The search results provide a set of information. Each entry of the search results presents a title of the webpage, a URL, and a snippet of text which is a brief preview of the information displayed on the webpage. A list of related searches is also provided as a search result. When search terms include a misspelled word, the result asks if a correctly spelled search term was intended by the user and shows the search results of correctly spelled search terms. Such functions can be used as a check for spelling mistakes. Figure 3.2 shows the interface of Google.

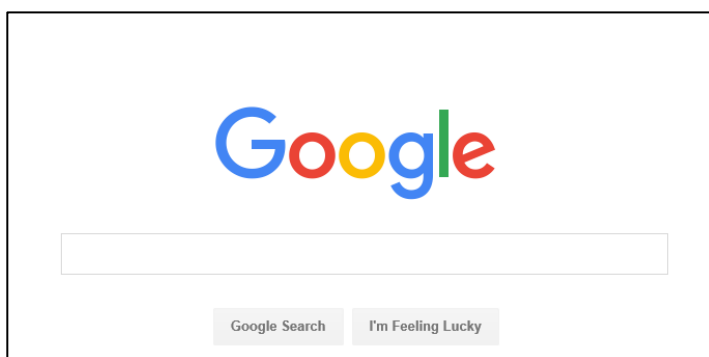


Figure 3.2. The Interface of Google (April 22, 2016)

### **3.2.1.3. Corpus**

The corpus used in the study was The Corpus of Contemporary American English (COCA) ([corpus.byu.edu/coca](http://corpus.byu.edu/coca)); it is a web-based corpus equipped with corpus analytic tools. With more than 520 million words of spoken text, fiction, popular magazines, newspapers, and academic texts from 1990 to

2015, COCA is the largest freely available corpus of English, and the only large and balanced corpus of American English (Davies, 2015). Figure 3.3 shows the interface of COCA. It has a set of query syntax used to search for exact words or phrases, wildcards, lemmas, parts of speech, collocates, and synonyms and other advanced search functions so as to contrast and compare semantically-related words.

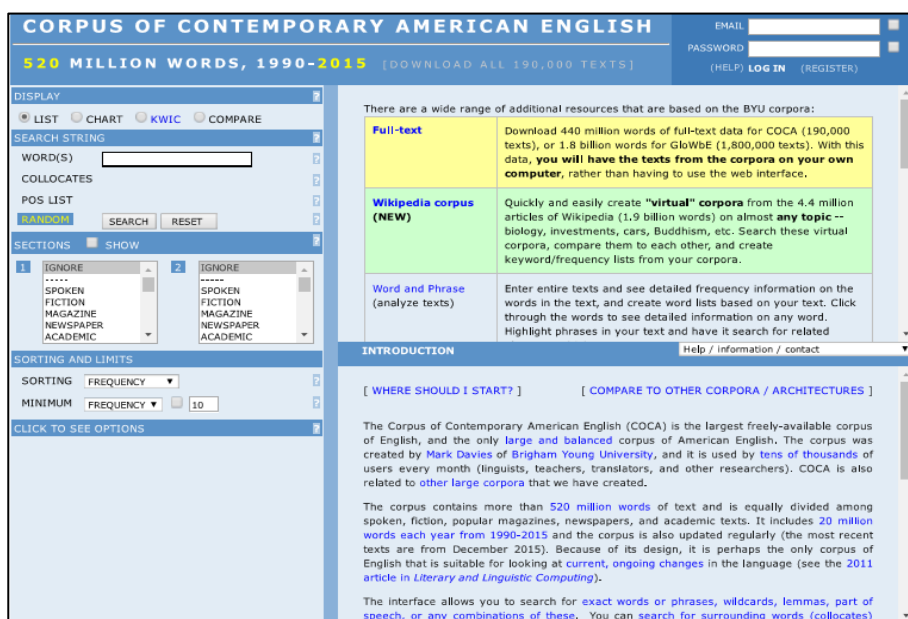


Figure 3.3. The Interface of COCA (April 22, 2016)

COCA provides two types of concordance display; one is keyword-in-context generated from List, one of the display formats wherein the search word or phrase is underlined in bold type with its immediate context provided; and the other is KWIC (Keyword in Context), in which the search word or phrase and its adjacent words are highlighted in a different color by the part of speech of the word. The use of COCA is free of charge with daily access limits to queries and KWIC entries; unregistered users are allowed 20 queries

and 2,000 KWIC entries per day, and registered users have different access limits according to their levels. The participants of the present study were registered as level 1, which allows 50 queries and 5,000 KWIC entries per day.

### **3.2.2. Writing Prompts**

Twenty-nine writing topics were used as writing prompts for the 30 writing tasks in the study. The topics were comprised of 24 selected topics from the list of TOEFL independent writing test sample topics provided by Educational Testing Service (ETS) (2006) and five free topics based on the participants' personal needs and interests (see Appendix 1). The writing prompt for the final session was identical with that of the first session. This was done to see if there was any difference in the use of the online resources in writing processes between the starting point and the ending point of writing on the same topic.

The writing prompts provided by ETS ask a writer to discuss his or her opinion regarding the topic and to support that opinion with specific reasons and examples. Such types of writing have been recognized as academically important (ETS, 1989). According to ETS (2006), these topics are general and do not require specialized knowledge. The ETS writing topics were categorized by the four categories of persuasion, comparison and contrast, description, and opinion, as based on which topics were appropriate for each type of writing. The participants were asked to write about six topics in each category in order to obtain diverse samples of each type of writing. From the ETS writing topic list, the researcher provided the participants with a list of

six topics for persuasion, 17 topics for comparison-contrast, 12 topics for description, and 15 topics for opinion at the orientation session. These topics are presented in Appendix 1.

The participants were asked to choose six topics to write in the categories of comparison-contrast, description, and opinion. This was intended to allow the participants to have more options and freedom to choose what they wanted to write about within a restricted set of writing topics so that they could potentially be more self-motivated to write about their chosen topics. The free writing topics were designed to extend such an approach and to allow each participant to have writing opportunities based on individual needs. The participants wrote about different topics with different forms of writing such as an abstract, a brief report about ongoing research, an e-mail to a friend, and essays about personally interesting topics. The free writing topics for each participant are also presented in Appendix 1. The order of writing topics throughout the 29 sessions was not controlled; the participants wrote about what they wanted to write at each writing session based on their own decision made in advance before each session started. In the following section, the tasks performed at each session will be explained in detail.

### **3.3. Tasks**

The present study adopted multiple elicitation tasks to obtain data from various sources to examine in depth the participants' use of the online resources in their writing processes. The participants completed three tasks in



every session: writing, think-aloud, and an interview. As a session began, each participant performed the writing task and think-aloud simultaneously. The interview followed immediately after the participant's completion of the writing. The details of each task are presented and discussed below.

### **3.3.1. Writing Task**

Extensive writing tasks were performed to elicit the participants' use of the online resources in the process of writing in English. The participants were asked to write a short essay on computer in each session. The text was produced using Notepad on computer, which is a basic word processor offered as an accessory to the Windows operating system. The specific use of Notepad as a word processor in the study was to avoid the effect of a word processor equipped with several writing aid functions, such as spell checker, grammar checker, and dictionaries, so that the use of the three online resources as writers' aids could be clearly elicited and focused upon throughout the course of writing process.

Three types of online resources—an online bilingual dictionary, a search engine on the Web, and a Web-based corpus and concordance equipped with corpus analysis tools—were made available during the writing task for reference and consultation. The writing topic was predetermined by the participant before each session began, as previously noted. Although the length of a written text was not restricted, approximately 250 to 300 words were suggested for goal length at the orientation session. In each session, the participants wrote the first draft without a break until the writing task was completed. Information about the length of each participant's produced texts

is presented in Table 3.4.

Table 3.4. The Number of Words in Each Participant's Produced Texts

	Minimum	Maximum	Mean	SD	Total
Ara	119	348	237	41.50	7097
Yuna	173	327	241	33.18	7231
Joon	98	206	152	28.95	4573

A time limit for completing the writing task for each session was not imposed so that the participants' inclusion of online resources for completion of the writing process would not be affected by time constraints. However, it should be noted that the participants were not entirely free from time constraints while they were writing. This was due to their having limited available time to participate in the study; they were busy graduate students and spent much of their limited available free time to participate in the study. Given such a unique kind of time constraint, it can be suggested the participants were under time pressure to some extent while they were performing the task. The participants' average time taken for a single writing task throughout the thirty sessions appeared to range from 53 to 65 minutes. Table 3.5 shows the information about the amount of time taken for each participant's performance on the writing tasks.

Table 3.5. The Amount of Time Taken for Each Participant's Performance on the Writing Tasks

	Minimum*	Maximum*	Mean*	SD	Total*
Ara	34	97	53	12	1575
Yuna	36	82	55	10	1662
Joon	46	94	65	13	1942

\*unit: minutes

### **3.3.2. Think-Aloud**

Using a think-aloud technique, the participants were asked to verbalize what they were thinking and doing while performing the writing task and using the online resources. The participants were encouraged to spontaneously speak out anything that came to their minds during the task. The verbalizing language was Korean, the participants' L1. The participants' think-alouds were collected to obtain direct information about their writing behaviors and problems during the task, any problem-solving behaviors, and the perceived purpose of using the online resources. At the orientation sessions, the participants were instructed how to think-aloud with the demonstration and were trained this skill set with practices. The participants had become familiar with the task throughout the thirty main sessions; however, the researcher reminded the participants of the need to keep talking when they seemed to forget to think-aloud from time to time. This approach is recommended as a think-aloud technique by Mackey and Gass (2005) adapted from Macaro (2001).

### **3.3.3. Interview**

The interview proceeded immediately after completing the writing task, including the think-aloud. The interview carries the purpose of obtaining the participants' retrospective verbal reports on their writing tasks with the use of the online resources; it is to gain clarification and elaboration of what was done and to investigate other dimensional aspects involved in the writing process, such as the participants' perceptions and attitudes. Each interview was conducted in Korean for ten to twenty minutes on average. During the

interview, the participants looked at the computer screen to see their written text while they answered the researcher's questions. Table 3.6 shows the total and average amounts of interview time for each participant.

Table 3.6. The Interview Time for Each Participant\*

	Average	Total
Ara	12	384
Yuna	13	401
Joon	18	541

\*unit: minutes

The interview was semi-structured and comprised of two parts: one with the guide questions and the other with follow-up questions that addressed the issues of each session, plus additional questions that emerged in each session. The former part came in a form similar to self-reporting on the guide questions (see Table 3.7) and the latter portion was more interactive; the researcher (acting as the interviewer) asked open-ended questions while nudging the participants to fully express themselves by asking, "Anything else?" following Mackey and Gass's (2005) suggestions. The latter considered the fact that well-paced follow-up questions can elicit further descriptions of the event or experience, which after all is the focus of inquiry (Roulston, 2013).

These guide questions have two purposes. The first purpose is to identify how the online resources were used and to triangulate the answer with the actual writing process and the written text. The second purpose is to help the participants think about their use of the online resources during their writing in English from various angles; this way the participants can more easily and

fully provide the researcher with their perceptions involved in the process of writing in English while using online resources.

Table 3.7. The Guide Questions Asked in the Interview

- 
1. What is the knowledge of English found from using the online resources?
  2. What was the difficulty or inconvenience that you had while writing in English with the use of the online resources?
  3. What do you think of the merits and demerits of each online resource used in the process of writing in English?
  4. What do you think of using the online resources while writing in English?
  5. Were the online resources used in the process of writing in English helpful to you? If so, how did they help you?
  6. Please discuss your opinion about writing in English with the use of the online resources.
- 

### **3.4. Procedures**

This section provides information about the settings and procedures to collect data. Section 3.4.1 describes the time and place arrangements that took into consideration the participants' convenience and environmental conditions. Section 3.4.2 explains the whole process of data collection and features of the collected data. Section 3.4.3 describes how the data was transcribed in order to be analyzed.

### **3.4.1. Settings**

The time for data collection was flexibly adjusted to the participants' available schedules; collecting data was conducted on weekdays and weekends in the daytime and evening, and each participant participated in the study from once a week up to six times a week. The number of sessions that proceeded per day was mostly one or two per participant and rarely up to three, contingent upon the participants' schedules.

The place for collecting data was a classroom on campus and a private studio with a computer connected to the Internet located in Seoul. As this study investigated individual writers' self-directed use of the online resources in their writing in English, the time and space for data collection were not restricted in so far as there was always a computer available offering Internet access.

### **3.4.2. Data Collection**

Before collecting data, the study was approved by the Ethics Committee of the Institutional Review Board (IRB) of Seoul National University (Approval date: November 26, 2015). The researcher was required to submit a research proposal to IRB in order to conduct research. The proposal for the present study was submitted on October 30, 2015. The data collecting procedure was initiated after the study was approved by IRB.

The initial procedure for data collection involved recruiting participants. The participants were recruited by convenience sampling through the researcher's personal connections. The researcher looked for potential participants among Korean adult learners of English as undergraduate or

graduate students or university graduates who were not in English-related majors but who were equipped with computer skills to type in English and to search on the Internet. Among a number of people who showed an interest in participating in the present study, three Korean adults voluntarily decided to participate in the study. The data was collected for a period of two to four months, the timeframe varying for each participant. Table 3.8 shows the period of conducting data collecting procedures for each participant.

Table 3.8. The Period of Conducting Data Collection

Participant	Orientation	Main Sessions (30 times) Session 1 – Session 30
Ara	December 3, 2015	Dec. 5, 2015 – Jan. 28, 2016
Yuna	December 9, 2015	Jan. 12, 2016 – Mar. 9, 2016
Joon	December 4, 2015	Dec. 5, 2015 – Mar. 23, 2016

The data collecting procedures were comprised of the orientation session and the main session, which was iterated thirty times for each participant. Beginning with the orientation, the participants' background specifics regarding age, gender, major, English proficiency level, English learning history, residence in English speaking countries (if any), ability in other foreign languages (if any), goals for learning English, daily exposure to English, and difficulties with English were obtained through the participants' oral reports. After that, a set of five vocabulary tests were administered to estimate the participants' English proficiency levels. The participants took tests on the computer and with a printed test sheet.

In the orientation, the participants were provided with the instructions and demonstration of three tasks to perform: writing an essay, performing a think-

aloud, and participating in a post-writing interview. They also were shown how to use the online resources with hands-on practices. This process proceeded for about three to four hours. First, the participants were introduced to what they needed to do for each task. They received the writing topic list as presented in Appendix 1 so that they could take time to look it over and think about what they would write during the main sessions. The participants were asked to notify the researcher of the writing topic for each session in advance of session starting time. The participants were encouraged to think about contents to write for the topic in advance before each session so that they could focus more on writing a text and using the online resources during the session. Second, the think-aloud technique was introduced. The participants learned what think-aloud is and then had time to practice doing the sample writing task with think-aloud to help them become familiar with the task. This took about twenty to thirty minutes. After that, the interview questions in Table 3.7 were introduced, and the researcher explained how the sessions would proceed.

After introducing the tasks, a description was given of how to use the online resources of NED, Google, and COCA. This was demonstrated with hands-on practices. Further, the functions and attributes of each online resource and how to utilize them were presented. Considering the participants' unfamiliarity with COCA, the conceptual knowledge of corpus, concordance, and collocation was explicitly described and explained in depth verbally to the participants so that the participants might better use the corpus tools based on appropriate understanding of the principles. As the participants were not familiar with COCA, two more orientation sessions on COCA for about forty



minutes each were provided in the early period (within the first 10 main sessions) to meet the participants' requirements for getting used to this system.

The main session was comprised of performing a writing task with simultaneous think-aloud and followed by an interview. The computer monitor screen displayed each of the three online resources on a different tab of the Web browser and also displayed an activated window of a blank notepad. When a participant was ready to write on the computer, the session began. During the writing task, the computer screen and the voice of the participant's think-aloud were recorded simultaneously by oCam,<sup>5</sup> a screen-capturing video- and audio-recording software. After completing the writing task with think-aloud, the interview was conducted immediately and also recorded by oCam. After the interview was over, a single session ended. In this way, a grand total of thirty sessions proceeded and data accumulated. From the data collecting procedures, the data of the participants' writing processes, produced texts, and interviews were gradually collected. Table 3.9 shows the overview of the collected data.

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<sup>5</sup> <http://ohsoft.net/kor/ocam/download.php?cate=1002>

Table 3.9. The Collected Data

Data type	Transcribed writing process
Content	<ul style="list-style-type: none"> <li>• The writing process displayed on the computer screen from the thirty sessions</li> <li>• Think-aloud data from the thirty sessions</li> </ul>
Format	MP4 file
Size	Ara 1,575 min.; Yuna 1,662 min.; Joon 1,942 min.
Data type	Transcribed Interviews
Content	<ul style="list-style-type: none"> <li>• The audio recordings of the interviews</li> <li>• The computer screen display from each interview</li> </ul>
Format	MP4 file
Size	Ara 384 min.; Yuna 401 min.; Joon 541 min.
Data	Written Texts
Content	<ul style="list-style-type: none"> <li>• 30 written texts produced by each participant (90 texts in total)</li> </ul>
Format	Text file (.txt)
Size	Ara 7,097 words; Yuna 7,231 words; Joon 4,573 words

### 3.4.3. Data Transcription

The writing process data and the interview data were transcribed so that it could be analyzed in depth. The writing process was transcribed in a form that facilitated dividing the whole process into a sequence of events. An event means a single occasion of a participant's use of an online resource in the middle of producing a text. The think-aloud data was transcribed in the same form in company with a transcribed event. A single event was transcribed according to the protocol presented in Table 3.10. The interview recording data was transcribed into a text. In the next section, the methods to analyze the transcript of the writing process and the interview will be discussed.

Table 3.10. The Protocol to Transcribe the Writing Process

#	[OR] XX (T) > R (T) > A (T) > W (T)
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#: The number of the event (i.e., 1, 2, 3...)

[OR]: The type of an online resource used  
       [D] Naver English Dictionary, [G]: Google, and [C]: COCA

XX: Search terms (i.e., a single word or phrase in Korean or English)

(T): The synchronous think-aloud data

> : The change of activities or the border between activities

R: The result of the search (i.e., what the online resources display as a result)

A: The action taken in response to the result

W: The produced text after using the online resource

### 3.5. Data Analysis

There are two types of transcribed data in terms of its contents. One is writing process data, and the other is interview data. The analysis of the writing process data focused on investigating the participants' use of the online resources while they performed L2 English writing tasks. The analysis of the interview data explored the participants' perceptions on using the online resources extensively. Each type of data was analyzed, and these two kinds of data were examined in conjunction with produced written text. The methods to analyze writing process and interview transcripts are discussed in the following sections respectively.

### **3.5.1. Analysis of Writing Process**

First, the writing process transcript was analyzed by coding a purpose for using an online resource at each event. The coding scheme was developed based on the participants' actual use of the online resources. In the process of developing the coding scheme, the taxonomy of dictionary purpose and corpus consultation as used by Lai and Chen (2015) (see Appendix 5) was referred to and used as a top-down approach to develop the taxonomy of the present study. The coding scheme is the result of the interaction between a top-down deductive approach from Lai and Chen's (2015) taxonomy (e.g., Code D1 to D9, D11, G6, C1, C2, and C8 in Table 3.11) and a bottom-up inductive approach from the participants' actual use of the online resources (e.g., Code D10, D12, D13, G1 to G5, G7, C3 to C7, and C9 in Table 3.11). While examining the transcript data, the emerging taxonomy categories were evaluated through a continuous sorting and checking of the data and were included in the final taxonomy when a category was found to be useful in contributing to the establishment of a robust categorization. Throughout such a course of analysis and elaboration, the final version of the coding scheme was established. Table 3.11 presents the coding scheme to analyze the writing process transcript.

Table 3.11. The Coding Scheme for the Writing Process Transcript

Coding Category	Code
<b><u>Online Dictionary</u></b>	
1. Checking the overall information of the usage and sentence structure	D1
2. Checking spelling	D2
3. Checking inflection, conjugation, derivative	D3
4. Finding an English equivalent for a single word in Korean	D4
5. Checking meaning of a word or a string of words (phrase)	D5
6. Finding synonyms	D6
7. Finding antonyms	D7
8. Checking the part of speech	D8
9. Finding an English equivalent for a string of words in Korean (compound word, phrase, or sentence)	D9
10. Finding example sentences	D10
11. Finding collocations	D11
12. Checking what was written to see whether it is correct or not	D12
13. Etc. (Search in the portal website linked to the online dictionary)	D13
<b><u>Google</u></b>	
1. Finding a word in the slot in a string of words using an asterisk with double quotes	G1
2. Finding examples of a word or a phrase	G2
3. Checking what was written to see whether it is correct or not	G3
4. Checking usage frequency of a particular word or a phrase	G4
5. Searching for information including the topic-related contents	G5
6. Checking spelling	G6
7. Using a translation function	G7
<b><u>COCA</u></b>	
1. Finding synonyms	C1
2. Finding collocations	C2
3. Finding example sentences of a specific word	C3
4. Finding example sentences of a specific phrase or a string of words	C4
5. Finding example sentences of a sentence structure	C5
6. Checking frequency (token) of a word or a phrase	C6
7. Checking what was written to see whether it is correct or not	C7
8. Checking the form of a word (spelling, inflection, conjugation, derivative)	C8
9. Etc. (Generating a word list for a particular POS, e.g., conjunction)	C9

Second, the frequency of each online resource purpose was calculated after coding the events. The result of calculating the frequency was analyzed qualitatively by examining the relevant events. Each participant's pattern of online resource use was investigated along with his/her behavioral

characteristics of writing in English. The interview data was used as corroborating evidence in the analysis. In addition, each writer's produced text was examined alongside process. This was done to better understand how text was produced using a writing process incorporating online resource use and computer technologies.

### **3.5.2. Analysis of Interview**

The interview transcript was analyzed thematically via a grounded theory approach. Here induction was utilized to draw key concepts and ideas through an iterative process of coding, focusing on the topical content of talk or words spoken. These codes were then sorted and categorized to develop "themes" or "grounded theory" (Glaser & Strauss, 1967; Roulston, 2013). Theorizing means to draw themes inductively from the transcript data. Based on the methods for establishing a grounded theory, as discussed by Corbin and Strauss (2015), the transcript was analyzed to identify core concepts, and the identified concepts were categorized in terms of their properties and dimensions until data saturation was reached. Table 3.12 presents the coding scheme for the interview transcript.

The dataset of what the participants did in the process of writing and what they verbalized in the think-aloud and in the interview were triangulated in the analysis to support the findings of the study. Both the writing process data and the interview data were scrutinized under an iterative and cycling process of analysis from broader to narrower and toward more specific observations.

Table 3.12. The Coding Scheme for the Interview Transcript

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**Use of the online resources**

1. Information found or learned from the online resources (I)
2. Merits (+) and demerits (–) of each online resources:  
Online dictionary (D + / D –), Google (G + / G –), COCA (C + / C –)
3. Patterns of online resource use (U)
4. Evaluation of online resource use:  
Positive evaluation (P), Negative evaluation (N)

**Writing process**

1. Behavioral patterns of writing in English (B)
  2. Thoughts and perceptions on writing in English (T)
  3. Difficulties of writing in English (WD)
  4. Affective change regarding writing in English (A)
- 

In the chapters that follow, results of the analysis will be presented and discussed. The findings for each individual case of study participation will be presented in chapters regarding the two research questions respectively. The writing process will be described in detail to provide in-depth description of the writers' overall patterns of writing behavior, including their ways of using the online resources in writing tasks and other noteworthy phenomena in each case. Along with the findings from the writing process, the writers' perceptions and other psychological characteristics that emerged throughout the extensive writing tasks using online resources will be presented and discussed.

## **CHAPTER 4**

### **THE JOURNEY OF ENGLISH COMPOSITON**

### **BY TRANSLATION: THE CASE OF ARA**

In Chapter 4, the case of Ara is delineated and discussed in terms of her use of online resources while performing the writing tasks and her perception on the use of online resources in English composition. Section 4.1 presents Ara's overall writing behaviors and writing difficulties along with the analysis of how she used online resources respectively and conjointly to support her writing needs. In Section 4.2, Ara's thoughts and opinions on using online resources while writing in English and her affective and attitudinal characteristics related to English composition are explored.

#### **4.1. Characteristics of Ara's Computer-Assisted L2 Writing with the Use of Online Resources**

Ara went through translation from Korean into English while she was writing in English. Fundamentally, Ara thought first in Korean and then translated her thoughts and words in Korean into English. Ara also stated at the interviews that she always thought first in Korean when she wrote in English (see Excerpt 4.1 and Excerpt 4.2). Throughout the writing processes of planning, formulating, and revising, translation appeared to be Ara's basic approach and strategy to write in English. Such a writing manner accords with



her own definition of English composition as seen in Excerpt 4.3.

Excerpt 4.1. Since I'm not good at English, I think first in Korean and then check how this expression can be written in English.<sup>6</sup> (Ara's interview quote, Session 1)

Excerpt 4.2. When I write in English, I think first in Korean. (Ara's interview quote, Session 3)

Excerpt 4.3. English composition is a work of translation from what I think in Korean into English. (Ara's interview quote, Session 11)

Ara usually brought a note that she had written in Korean to the writing session. The note was about what she would write for the topic of the session. She followed faithfully the instruction at the orientation that encouraged the writers to think about what to write for the topic in advance before coming to each session. After the first writing session, Ara realized that she really needed to prepare for the writing task beforehand. Thus, she had her own time at her own place to prepare and to think about what she would write for the upcoming or the next writing session. Her notes were not in the form of a complete outline; she listed the contents of what she would write for the task in a small number of paragraphs. The notes showed that she had a certain amount of planning time that helped develop her thoughts on the writing topic in advance. Ara was allowed to look at the prepared note while she was writing, but her writing was not restricted to the note; specific contents of the writing were often changed in the course of writing as new or better ideas came out during the process of writing. The sample of Ara's note in Korean

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<sup>6</sup> All the interview excerpts have been translated.

and that of her English composition based on the note are presented as below.

Ara's note in Session 25:

책

- 전자책과 다양한 소프트웨어를 활용하여 학습할 수 있지만 아직까지 가독성은 종이책이 좋다. 전자책은 종이책보단 해상도가 떨어지고 눈이 불편하다. 전기가 없는 상황에서 종이책은 상관없이 열람이 가능하다. 또한 필기도 자유롭게 가능하다
- 노트북 가격이 예전에 비해 많이 저렴해져서 대부분의 학생들이 소유하고 있다. 만약 노트북을 가지고 있지 않다 하더라도 학교에서도 대여해준다. 그러므로 공금을 들여서 학교에서 데스크탑을 사야할 이유가 없다. 그리고 와이파이의 활성화로 각 노트북이 자유롭게 인터넷 연결이 가능하다.
- 컴퓨터는 구매비용과 구매 후 비용이 많이 든다. 책은 두권 정도만 있어도 번갈아가며 대출이 가능하다. 컴퓨터 한대 값이면 책을 많이 구매할 수 있다. 또한 소프트웨어가 자주 업그레이드 되다보니 컴퓨터는 구매 후 성능개선을 위해 끊임없이 비용이 든다. 그리고 컴퓨터 PLC가 짧다.
- 공용 컴퓨터를 사용함으로써 발생하는 개인정보유출우려. 이와 같은 보안문제를 해결하기위해 추가비용 발생이 예상된다.

Ara's text in Session 25:

If school has enough money to purchase either computers or books, I think school should buy books first.

Nowadays, we can take advantage of using computer or e-book to learn efficiently, but it may be less readable. The eyes can get easily tired if we look at a computer screen for long hours. Computer needs electricity and suitable space. In case of paper book, taking lecture notes is easier than computer.

Secondly, laptop is offered lower prices than before, thus many students bring their own laptop at school. If they don't possess a laptop, they can also borrow it for a while. Every laptop can access to free Wifi everywhere in campus. Therefore, there are no reason to spend a lot of money to buy computers.

Third, regarding expence, school spend more money to buy computers than to buy books. Because two or three same books at library are enough to satisfy students needs, but not only price of computer is high but also cost of computer's performance maintenance should be spent for long time. Computer's product life cycle doesn't last more than 3 years, so invetisment on computer purchasing isn't permanent.

Forth, development of information technology offers many kind of internet financial services, but it risks the chance of identity theft. Especially, public computer is more vulnerable for security.

For those reasons, I think that the school should purchase books to improve learning effeciency, to reduce cost and to protect personal information.

In the process of producing text in the unit of word, phrase, clause, or sentence, Ara constantly accessed the online resources all the time to solve her immediate problems that occurred while writing. In most cases, Ara's own

writing raised lexical or grammatical questions that made her access the online resources to search for the answers. When Ara wrote “because it is necessary to have more tourism information from other” in the middle of writing in Session 6, the word “tourism” raised a question to her whether it was appropriate or not in the context. Ara immediately searched for “tourism information” with quotation marks on Google and checked the search results. After that, she looked up NED, searching for “관광정보” to obtain its English equivalent. As soon as she found “tourist information center” from the search result, she accessed Google again to search for “tourist information” with quotation marks. When she discovered that “tourist information” has much more results than “tourism information” on Google, she changed the word “tourism” to “tourist” in her original sentence. Such online resource use back and forth between NED and Google was frequent in Ara’s case.

Ara also could correct her incorrect knowledge regarding the part of speech of a particular word by using online resources. When she wrote “to give further explain” in Session 11, she checked “further explain” on Google. While she was looking through the search results, she realized that the word “explain” was a verb, not a noun. After that, she looked up NED to check the part of speech of “explain” and searched for “further explanation” on Google. Through this process, she could correctly revised her original writing by changing “explain” to “explanation.”

Ara’s reaction to the findings from consulting the online resources is divided into two different behaviors. One is to apply the findings to her writing, and the other is to use other resources to continue to seek the answers for unresolved problems and remaining questions or to cross-check the

information she found. On the first type of reaction, Ara wrote what she found from the resources as it was or produced her own sentence based on the findings. The former case is ranged from writing a single word to writing an independent clause. This can be seen as direct assistance from the online resources as Ara could adopt the findings without any modification. The latter case can be seen as indirect assistance from the online resources. She wrote a sentence that partially included a word or an expression from the original source text provided by the online resources. In this way, the original source text appeared in a different word order or in a different sentence structure in her writing. She found a hint about a word, an expression, or a sentence structure to use from what the online resources presented. This can be seen as a scaffolding that the online resources could provide in the process of text production. While she was searching the online resources, a new idea to write an expression in question came out. As writer's aids, the online resources assisted and facilitated Ara's writing process in producing a sentence with a meaning she intended to express. On the searching process using the online resources, better alternatives were derived as a result of the interaction between her knowledge and consultation of online resources. The second type of reaction made Ara move from the resource in use to other resources. Ara explored her further inquiry by using the other resource to obtain more information or to double-check the finding obtained from the resource she used first. Through such processes to consult other resources, Ara tried to enhance the reliability of her findings; she regarded such enhancement as necessary. After the online resource consultation, Ara came back to the text and kept writing. The example of Ara's reaction to the search results is

illustrated in the following process when Ara searched for the appropriate verb before the noun phrase “social responsibility” in Session 1.

1. Searched “\* social responsibility.” on Google
2. Thinking aloud “사회적 책임의 실현을 realizing으로 쓸까?”
3. Searched “realizing social responsibility” on Google
4. Thinking aloud “실현이라는 말을 쓰고 싶은데 어떤 표현이 있을까요?”
5. Searched “사회적 책임을 실행하다” on NED translator and found “implement”
6. Searched “implement social responsibility” on Google
7. Thinking aloud “검색 결과에도 나와 있고 괜찮은 거 같아요. 이걸로 사용하겠습니다.”
8. Wrote a sentence “This activity is to implement social responsibility in a business to improve the corporate sustainable development.”
9. Thinking aloud “사회적 책임을 시작하는 것으로 문장을 바꿀게요.”
10. Searched “implementing social responsibility” on Google
11. Rewrote a sentence “Implementing social responsibility in a business to improve the corporate sustainable development”

In regard to her use of online resources during the writing process, she usually went through a proofreading confirmation process using the online resources after she wrote what she thought. In most cases, she wrote a phrase or a sentence first and then checked whether what she wrote was right or wrong. This is not only a proofreading activity but also hypothesis testing through the assistance of the online resources. She also checked spelling and usage of particular words or expressions as well as sentence grammaticality such as subject and verb agreement. According to the result of the consultation, the writing was confirmed so that Ara could continue to write the next, or the written text was revised. The revision included error correction such as spellings or prepositions of collocations and change of the text by writing alternatives or paraphrases.

It was also found that her way to produce text tended to be not serial in the

word order in a sentence or in the sentence order in a paragraph. Some sentences were written from the back by adding a new phrase or clause in the beginning or middle of the sentence later. It was the same in a paragraph; she often went to work on previously written sentences in a precedent paragraph from writing a sentence in the paragraph that she was writing. Such a dynamic movement in writing the text can be examined with her frequent revision behaviors, which are noteworthy. During her writing, text revision occurred unexpectedly during and after the process of sentence writing whenever Ara felt a need to revise. The scale of revision was from a level of a word to that of a discourse.

In the word level, the final choice of a word to write in a phrase or a sentence went through a selecting process among competing candidates. Ara considered a number of options to write the most appropriate one and showed several changes of a certain word in the context before making the final decision. In other words, starting from a word A, Ara went through other option words B and C, and finally reached to a word D to select. In Session 5, for example, Ara went through a word ‘generate’ and ‘produce’ in order to write ‘make a profit’; voluntary ‘service’ was replaced with ‘activities’ through ‘work’, and the idea that a company supports students’ financial aid through scholarship was expressed as ‘develop scholarship program’, which omits an indefinite article though, through the word ‘offer’, ‘sponsor’, and ‘provide’. The part of speech of the words under such selecting process was various such as noun, verb, adjective, adverb, preposition, and conjunction. The revision of the lexical level also included changing the tense.

The use of the online resources was integrated in the process of making a

word choice. Ara tended to search a number of words or phrases either in Korean or in English to acquire more comprehensive evidence to make optimal judgments until she has a satisfactory result. She tended to double- or triple-check by iterative searches to obtain clearer evidence to bring more confidence to her use of the expression in question. Through the process of lexical selection, Ara showed her consideration of her use of lexicon to bring out a subtle nuance of a word or an expression and her pursuit of the optimal choice that can achieve effective communication. Another motivation to change a word was to use diverse vocabulary in the text; she often used the online resources to look up synonyms and tried to avoid the repetition of the same word in her text.

In the sentence level, she often showed changing a sentence structure by replacing an original sentence with a differently structured sentence of the same meaning. For example, she changed active voice to passive voice or vice versa. Adding a new word or a phrase into a sentence was also found. She sometimes went back to the sentences written or completed previously to insert an adverb or a prepositional phrase to elaborate the meaning of the sentence. In the discourse level, she moved sentences or paragraphs to different locations in the text, just deleted one or two whole sentences that she had written, and inserted a new sentence in the middle of a paragraph already written. As a result, the content and discourse changed from what she wrote first. Such of her revision behaviors shows her awareness of a logical flow of the discourse considering coherence, desire to improve the text quality constantly, and flexibility in her thinking process, and her active working memory cognition involved in the process of writing in English. After

finishing to write the first draft, she tended to skim the text and check typos to confirm the text to submit and terminated the task.

Ara's use of the three online resources appeared as seen in Table 4.1 and Figure 4.1, which present the frequency of the use of each resource over the thirty writing tasks and each percentage out of the three resources. Ara's intensive use of NED was found as it occupied over eighty percent of the entire use of the online resources. Ara used Google more often than COCA. The use of COCA was the least among the three online resources, and Ara is the one who used COCA the least among the participants. In her reference to the online resources, she used each resource for different purposes.

Table 4.1. Frequency of Ara's Use of the Online Resources in All Thirty Writing Tasks

	NED	Google	COCA	Total
Frequency	1439	233	106	1778
Percentage	81	13	6	100

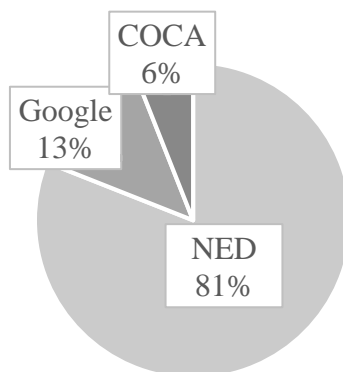


Figure 4.1. Percentage of Ara's Use of the Online Resources in All Thirty Writing Tasks



NED was her primary resource to consult, and other two resources were secondary. She solved most of her writing problems by using NED. Most of the time, she usually searched for appropriate English words or expressions in the context, English equivalent to Korean words or expressions, and checked usage related to grammar in both lexical and sentential level, spelling, and verb conjugation on NED. Ara's top three purposes appeared as finding an English equivalent for a string of words in Korean, finding an English equivalent for a single word in Korean, and checking the overall information of the usage and sentence structure as seen in Table 4.2.

Table 4.2. Ara's Use of NED in All Thirty Writing Tasks

Purpose of use	Frequency
Finding an English equivalent for a string of words in Korean (compound word, phrase, or sentence)	448
Finding an English equivalent for a single word in Korean	372
Checking the overall information of the usage and sentence structure	195
Checking spelling	116
Checking meaning of a word or a string of words (phrase)	111
Finding example sentences	65
Checking what was written to see whether it is correct or not	61
Checking the part of speech	25
Finding collocations	19
Checking inflection, conjugation, derivative	14
Finding synonyms	12
Finding antonyms	1
Etc. (Search in the portal website linked to the online dictionary)	0

She reported that she mainly relied on NED as she had to use Korean in the process of writing in English. She emphasized that her use of NED was indispensable as it was bilingual and thus provided interlingual information,

which was essential in her writing in English. Ara showed a successional use of Korean-English dictionary and English-Korean dictionary on the same item. She looked up an English word from the result of looking up a Korean word.

Her favorite use of the translator of NED was noticeable as she frequently used it and referred to its search results on her writing. Ara used that function much more frequently than other writers. For this, she reported that she used it very often because she thought in Korean first about expressions to write. This function provides a list of related information about English equivalents to Korean such as words used in a sentence with English equivalents and their meanings and idioms or examples sentences that might include the one that the writer is looking for. She preferred using the translator function when she looked up expressions longer than a word in a level of phrase or sentence especially for complicated ones.

Table 4.3 show the distribution of the purpose of Ara's use of Google. Ara used Google to search a certain word in a phrase or a specific phrase for validating the information found in the dictionary before using it as she was not sure whether the expressions suggested by the dictionary were authentically used by native English speakers. When she found more satisfactory information about her queries from searching Google, she gained confidence in using the searched expressions through credible confirmation from her perspective. She used Google to complement the weak point that a dictionary has, which is a limited number of example sentences, and to find more natural expressions through several searches. This can be seen as a type of a cross-referencing behavior that was also found in a previous study (Lee,

Lin, & Liou, 2006). Although Ara used Google beneficially when she used it, she did not always use it in every session. She did not use Google at all in six sessions, which are Session 7, 13, 15, 17, 18, and 26.

Table 4.3. Ara's Use of Google in All Thirty Writing Tasks

Purpose of use	Frequency
Finding examples of a word or a phrase	127
Checking what was written to see whether it is correct or not	62
Finding a word in the slot in a string of words using an asterisk with double quotes	40
Checking usage frequency of a particular word or a phrase	2
Searching for information including the topic-related contents	2
Checking spelling	0
Using a translation function	0

Ara was the least frequent user of COCA. She did not use COCA in eight sessions (Session 5, 18, 20, 21, 24, 26, 28, and 29) at all. Table 4.4 presents her purpose of using COCA. She used it for finding synonyms to use English more correctly and for searching the advanced level of expressions to write refined English sentences. Her motivation to use more polished style in her writing was fulfilled by using COCA, which was viewed as an authority of English by Ara. She used COCA to find example sentences of a specific word and phrase or a string of words in company with the use of Google for the same purpose. She used COCA to find collocations such as verb and preposition collocations, which were recognized as a weak area by herself. For example, she tried to find a collocational preposition for the verb “invest” through COCA and found the collocation “invest in” in Session 1. After finding “invest in” on COCA, she searched “invest in” on NED to double-check her finding.

Table 4.4. Ara's Use of COCA in All Thirty Writing Tasks

Purpose of use	Frequency
Finding synonyms	37
Finding example sentences of a specific phrase or a string of words	29
Finding example sentences of a specific word	16
Finding collocations	15
Checking what was written to see whether it is correct or not	4
Checking frequency (token) of a word or a phrase	3
Finding example sentences of a sentence structure	1
Checking the form of a word (spelling, inflection, conjugation, derivative)	1
Etc. (Generating a word list for a particular POS, e.g., conjunction)	0

Based on her report at the interviews and her behaviors at the writing processes, when Ara found new information from NED, she went through a verification process on Google to make sure whether the expression is actually and widely used by native English speakers. After that, she continued to write text. She could solve most of the problems by using NED and Google only, which is supported by her report at the interview. She thought that COCA provided authoritative knowledge on her English problem in question, and the writing tasks she performed in this study did not require her to look up such expert linguistic knowledge of English that much. She rarely used COCA as a series of the writing sessions proceeded toward the end.

On the process of writing along with the use of the online resources, she had opportunities to pick up knowledge of English in particular words, including collocations, expressions, usage, spellings, synonyms, meaning of a word, and the use of connectives. She also found out her partial and incorrect knowledge of some words and expressions: in Session 2, for

example, she realized the difference between *oil price* and *gasoline price* (what she looked for was gas price for automobiles); in Session 5, she found a difference between *pursuit* and *persuade*, which were confusing to her. Such incomplete knowledge could be improved through using the online resources while writing, and her foggy knowledge of English could be clarified through the writing tasks. She could modify her previous knowledge, which was wrong, and obtained correct knowledge through the task.

Toward the middle point of the main sessions, Ara reported that the expressions searched and used repeatedly in her writing remained and imprinted on her memory, and this led her not to use the online resources anymore for those knowledge that she could remember. Around the middle point of the main sessions, Ara felt that her writing skill had improved and developed in relation with her becoming familiar to the writing task and the use of the online resources. The effect of extensive writing tasks emerged on the process of repeating the task, which was observed through Ara's self-report. Because the expressions that she used in writing and the problems that she faced during the writing were repeated throughout the sessions, the accumulated experiences of facing and solving those problems provided Ara with the experience knowledge of writing in English.

Considering her use of the online resources, she reported that she received great assistance from the use of the online resources, which includes the process of hypothesis testing and writing confirmation that affects her knowledge of English and the process of writing. She thought and felt that her English ability and knowledge improved. As the main sessions proceeded toward the end, Ara reported that she became equipped with better problem

solving skills in her writing and in her use of the online resources. As discussed above, strategies to write in English and strategies to use the online resources have been learned implicitly and developed little by little over the entire 30 sessions. In the ending point, she reported that she could develop her habits that are useful in her learning of English, such as more effective use of the online resources. In the interview of Session 30, she said she got the knack of using each resource through the repeated use of the online resources. For the NED translator did not always provide the results of perfect and complete translations that satisfied Ara, she used a strategy to search for circumlocution of Korean expressions to obtain its optimal English expressions that suit her needs. On the NED translation, for example, Ara searched “대기오염이 덜 되었다” and then “공기가 깨끗하다” in Session 2, consecutively searched “개인적인”, “비밀스러운 내용”, “개인적인 내용”, “민감하고 개인적인 사안”, and “개인적인 사안” in order in Session 15, and searched “원만한 성격” and then “대인관계가 좋은 성격” in Session 26. She often reported that she could solve most of the problems she faced through using the online resources during the writing process.

As her text was produced through the help of the online resources, the texts include several words or lexical chunks and even a sentence obtained from the online resources. Most sentences were completed by referencing the online resource. Although Ara had such extensive assistance from the online resources, her texts still include minor typos and misspellings that she could not notice while she was writing as well as incorrect language use due to her insufficient knowledge of English. Such incorrect use of English included the use of prepositions, omission of articles, and unnatural use of a word in the

context. However, her text in Session 30 shows some improvement comparing to her text in Session 1 in the use of vocabulary; the total number of unique words (word type) increased from 78 words to 109 words along with the increase of the number of sentences from 8 to 11. The average sentence length was also increased from 14.88 to 17. Such an increase is not necessarily seen as absolute improvement; however, such a change and a difference between the initial point and the end point can be understood as her development of writing fluency based on her established writing process incorporating the use of the online resources.

#### **4.2. Ara's Perception of Using Online Resources in L2 Writing**

Throughout the thirty writing sessions, Ara's perception on the use of online resources in L2 writing was explored in depth through a series of interviews. At each interview, she evaluated each resource by its strength and weakness and how she perceived them.

It is noticeable that she had awareness of complementary use of the three online resources from the first session. She appreciated this set of online resources as they are available anytime and anywhere with the Internet connection. Considering the convenience and easiness of access, she thought they were very useful resources as she could receive instant and immediate help without cost and time limit. The interactive features of the online resources were valued as she could receive assistance through the interaction with resources while using them. She said the online resources guided her so

that she could make her writing better and fix the errors in her writing appropriately.

Excerpt 4.4. I think using these three online resources would help me a lot write in English by myself because they have complementary functions respectively. (Ara's interview quote, Session 1)

Excerpt 4.5. Since each resource has different strengths and weaknesses, I think the complementary use of these online resources makes it possible to write a text through robust writing skills. (Ara's interview quote, Session 30)

Ara said the use of Google was to complement and compensate the drawback of NED. She was suspicious about the dictionary's English translations for Korean in terms of whether the presented expressions were actually used in authentic context by native English speakers in English speaking countries. Therefore, those expressions found in the dictionary required further checking processes as she needed more confidence in using them. Additionally, NED was used at the lexical level and had limitations on providing information of a longer string of words at the sentence level. Such perceived limitations of the online dictionary made her use Google to check a sentence or an expression she found or created by the information from the dictionary.

Excerpt 4.6. I use Google to find sentences that are natural to or used by native English speakers. The awkward results from the NED translator can be checked and revised through Google. (Ara's interview quote, Session 30)

Ara felt difficulties in using unfamiliar search query syntax and the English monolingual interface of COCA. Less use of COCA was caused by her unfamiliarity of the tools and her psychological distance with its English



monolingual interface, which seemingly complicated to use until she got used to it at around the midpoint of the whole series of the writing sessions. However, she trusted what COCA offered as a search result including example sentences appeared in concordance undoubtedly; she thought COCA provided a credible source she could use and apply to her writing. She thought she would use COCA more when she would write an important text in English such as a research article. The function of generating the list of synonyms were highly appreciated among the numerous functions of COCA.

Excerpt 4.7. The strength of COCA is the sentences provided as search results. They are very robust and helpful to write a text with a high degree of completion. I think almost the 99.9 percent of COCA results is credible. (Ara's interview quote, Session 30)

Her positive perception of using online resources while writing continued throughout the whole main sessions. However, the awareness of her need of a human expert to check her writing emerged since Session 4. She thought her writing required review or intervention of a human expert to be more complete in terms of using correct sentences. Although she thought the use of the online resources while writing in English was very effective, the overall assessment and review of her writing was beyond her ability even with the online resources. This was perceived as the greatest limitation of using the online resources in writing by Ara.

Excerpt 4.8. I am very satisfied with getting to know new expressions little by little and using those expressions, but I have less confidence in the overall sentences generally...It is almost impossible to confirm long sentences. On that point, I think human assistance is required. (Ara's interview quote, Session 4)

Her writing difficulties were found in expressing her ideas precisely and using a variety of sentence structures. She attributed her writing difficulties to her lack of grammatical knowledge and vocabulary. She said she had to utterly rely on the online resources when she knew nothing in English. She thought writing in English always required external help as she could not do it independently by herself. She said writing in English without any kind of help would be “almost impossible” (from the interview in Session 22). However, she believed that she could write text in English with better quality with these online resources. She thought these online resources contributed to her writing of more complete text.

## **CHAPTER 5**

### **A THRILLING TREASURE HUNT ON THE WEB: THE CASE OF YUNA**

Chapter 5 delineates and discusses the case of Yuna in terms of her use of online resources while performing the writing tasks and her perception on the use of online resources in English composition. Section 5.1 presents Yuna's overall writing behaviors and writing difficulties along with the analysis of how she used online resources respectively and conjointly to support her writing needs. In Section 5.2, Yuna's thoughts and opinions on using online resources while writing in English and her affective and attitudinal characteristics related to English composition are explored.

#### **5.1. Characteristics of Yuna's Computer-Assisted L2 Writing with the Use of Online Resources**

Yuna's writing process also incorporated L1 processing as a starting point. Adopting a translation strategy was important to Yuna's English writing. Although Yuna selected writing topics in advance before doing the writing tasks, she needed more time to think about what to write during the task. During the writing task, she often jotted down the subject matter in Korean in words, phrases, or sentences. She said she had three steps in writing a

sentence in English: thinking of expressions in Korean, checking her thoughts in Korean, and checking her knowledge of expressions in English. This mental process was necessary for her to make Korean sentences simpler to express and write in English. In some sessions, she wrote topic sentences and some detailed supporting sentences in Korean on the notepad and continued her writing in English based on that. Yuna used discourse connective expressions such as ‘There are two reasons for supporting my opinions’, ‘Before the first argument’, ‘The first reason why’, ‘The second reason is that’, and ‘for example’. She started by writing a topic sentence in the first paragraph and wrote two to three paragraphs supporting the topic with examples and details. Finally, she had concluding sentences or remarks in the last paragraph, which usually function as the conclusion paragraph.

While Yuna was writing, she also used the online resources frequently. After writing a sentence, she typed in the sentence on Google to check whether her writing is correct. She used Google for this purpose mainly. She also liked the process of hypothesis testing, which is to check the expressions through searching them on Google. In Session 1, she stated that “I use Google to check whether my sentence is correctly written” in her think aloud and then typed in her sentence in the search engine box. She used NED when she faced a problem on the process of thinking in Korean and writing in English. She aptly used the examples provided by NED and tried to look for appropriate usage from the dictionary. The related search word function was useful to her as it helped to facilitate her word choices and finding alternatives. The information from the online resources frequently affected her writing; she changed expressions or revised her sentences according to the search results.

For example, when she checked her sentence “time is not wait for us” on Google in Session 25, Google suggested “time’s not waiting for us” as search terms, and she could revise her sentence correctly. When she searched “sea sport” on NED in Session 2, she discovered “water sport” as the appropriate vocabulary in the context and then used it in her sentence.

Yuna also used content knowledge from Google to find content-related expressions in English that could be used on her writing. As she often did not know what to write even in Korean about the topic, which may be partially due to insufficient planning, she searched for topic-related contents and expressions on Google and looked for the contents and expressions to write. When she found the useful relevant sources on Google, she referred to them in her writing through adaptation and application. In Session 8, she searched “poor construction” on Google to find news articles about the topic and then examined the articles to find appropriate topic-related expressions so that she could use in her writing. In Session 11, she searched “contemporary people” and “stress” on Google and found the sentence “the contemporary people are put under stress and a sense of human alienation from their workplaces more than ever” from the search results; this sentence partially remained as “the contemporary people are put under stress from their workplaces” in her text.

Yuna used Google for several purposes in more active ways compared to other writers. Google was an idea bank to Yuna. When she faced difficulties in writing a sentence, her final resort was usually Google. She typed in keywords reflecting the writing topic and reviewed the search results. For the purpose of proofreading revision, she continued her searches on Google over several times with trimming her text until she obtained relevant and

satisfactory results. It was found that she was excited with such searching procedures on Google. She said she felt “joy” when the search results on Google showed numerous hits for the expressions that she thought.

Excerpt 5.1. When the search results of Google showed numerous hits for the expressions that I thought, I saw that I was right, and I felt great joy. (Yuna’s interview quote, Session 13)

Yuna often searched for synonyms to find possible alternatives as she tried to use various words and not to use the same word repeatedly. When she found synonyms from NED, she checked it once more through COCA with its function of generating a list of synonyms. When she was provided with candidates of synonyms, she checked them on Google again. In Session 13, for example, Yuna searched “결정되다” on NED and reviewed the search results. After that, she searched synonyms of “decide” on COCA and reviewed the search results. Next, she searched “습관이 정해지다” on NED and then searched “habits were settled” on Google. Such cross-checking between resources were often found in her use of the online resources.

She reviewed what she had written in the middle of writing and elaborated sentences by adding more meanings in the process of writing a sentence and revision. She changed the order of sentences and inserted new sentences in the paragraphs. When she wrote a sentence, she often wrote a subordinating clause in the back part of the sentence first and moved to the front part of the sentence to continue writing. Her constant revision during sentence writing process was found. In the middle of the sentence writing process, she referred to the online resources as a revision tool. Her reference to the online resources often included successive use of other resources and her critical evaluation

between her knowledge and the information from the online resources.

It is necessary to examine Session 29 that Yuna wrote about her research because of its difference found in the writing process and the use of the online resources. In this session, Yuna approached writing in English by L1 to L2 translation. First, Yuna wrote 11 sentences in Korean and then translated them in English. As a result of translation, there were 11 English sentences. On the translation stage, the content of the sentences was partly elaborated compared to her original sentences in Korean. She checked what she wrote in the unit of a phrase on Google and continued her writing based on the search results from Google. As she did in other previous writing sessions, she inserted a phrase or a clause in the beginning of a completed sentence that were already written and changed a phrase in the middle of a sentence by rephrasing it with similar or the same meaning. At the interview, she said that she could write the text easily with lesser time compared to other previous writing tasks because she used the words that she had often used and the sentence structures that she had often seen. This may suggest that there would be less looking up a dictionary for searching a word in the process of her writing based on discipline-specific expert knowledge.

Among the three resources, Yuna used NED the most followed by Google and COCA in order. Her use of Google is remarkable as it occupies similar percentage with that of NED. She used Google much more frequently compared to other two writers. Table 5.1 presents the frequency and percentage of Yuna's use of the three online resources, and Figure 5.1 shows the percentage of Yuna's use of each online resource.

Table 5.1. Frequency of Yuna's Use of the Online Resources in All Thirty Writing Tasks

	NED	Google	COCA	Total
Frequency	814	714	135	1663
Percentage	49	43	8	100

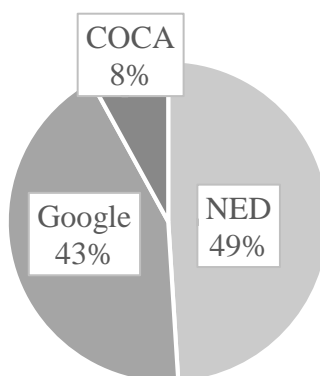


Figure 5.1. Percentage of Yuna's Use of the Online Resources in All Thirty Writing Tasks

Table 5.2 shows Yuna's use of NED. Yuna's top three purposes were finding an English equivalent for a string of words in Korean, finding an English equivalent for a single word in Korean, and checking the overall information of the usage and sentence structure. Besides the top three purposes, Yuna used NED to examine example sentences, to see whether she wrote correctly, and to check spelling and meaning of a word. She appreciated example sentences with Korean translations provided in the dictionary. A crucial role of example sentences in EFL writing was also asserted by Lai and Chen (2013). Unlike Ara, Yuna rarely used the translator function; she quit to use the translator function since Session 14 due to incomplete and unsatisfactory translated results. She made good use of related search function



to get a hint for writing. Her main purpose of using NED was to look up a word and example sentences.

Table 5.2. Yuna's Use of NED in All Thirty Writing Tasks

Purpose of use	Frequency
Finding an English equivalent for a string of words in Korean (compound word, phrase, or sentence)	325
Finding an English equivalent for a single word in Korean	264
Checking the overall information of the usage and sentence structure	69
Finding example sentences	35
Checking what was written to see whether it is correct or not	30
Checking spelling	26
Checking meaning of a word or a string of words (phrase)	23
Finding synonyms	14
Checking inflection, conjugation, derivative	11
Etc. (Search in the portal website linked to the online dictionary)	10
Finding antonyms	3
Checking the part of speech	3
Finding collocations	1

Yuna showed her active use of Google for various purposes as seen in Table 5.3. She used Google for obtaining more knowledge and information related to the topic by searching webpages including topic-related contents. She wanted to see the original texts that provided full context because she believed it to be helpful for her to find useful related expressions in English as a hint and to get ideas about what to write and how to write so that she could apply or bring it to her writing. She was satisfied by the assistance that she could receive from Google search and pleased to learn the usefulness of the search operator function of using double quotes. Her use of Google was to find what she wanted, like a treasure hunt, and to confirm what she wrote by phrasal

unit so that she could revise her writing properly.

Table 5.3. Yuna's Use of Google in All Thirty Writing Tasks

Purpose of use	Frequency
Checking what was written to see whether it is correct or not	349
Finding examples of a word or a phrase	233
Searching for information including the topic-related contents	90
Finding a word in the slot in a string of words using an asterisk with double quotes	26
Checking spelling	13
Using a translation function	3
Checking usage frequency of a particular word or a phrase	0

Yuna often used Google for finding relevant information to solve problems and checking what she wrote. She insistently checked grammaticality and usability of a specific word in a sentence or a specific phrase in the most of the text. Unlike other writers, she used Google for the purpose of referring to the webpages that provided the topic- and content-related text written by native English speakers to obtain the knowledge of appropriate expressions at the level of discourse and to get ideas about contents for writing and specific topic-related words and expressions.

The top three purposes of Yuna's using COCA were finding synonyms, finding example sentences of a specific phrase or a string of words, and finding example sentences of a specific word. Yuna did not use COCA for checking frequency only. Her major use of COCA was to find synonyms. She showed her motivation to use a different word when a certain word was repeated while writing, and such a writing need was suitably assisted by the function of generating a list of synonyms. This purpose of use occupied over the half of the whole searches in COCA (see Table 5.4).

Table 5.4. Yuna's Use of COCA in All Thirty Writing Tasks

Purpose of use	Frequency
Finding synonyms	68
Finding example sentences of a specific phrase or a string of words	22
Finding example sentences of a specific word	19
Finding collocations	16
Finding example sentences of a sentence structure	7
Checking what was written to see whether it is correct or not	1
Checking the form of a word (spelling, inflection, conjugation, derivative)	1
Etc. (Generating a word list for a particular POS, e.g., conjunction)	1
Checking frequency (token) of a word or a phrase	0

Throughout the thirty writing sessions, Yuna developed her strategic sense on her writing process and on her use of the online resources. In terms of the way to use the online resources, Yuna could establish her own procedures. Excerpt 5.2 presents how Yuna recognized her use of the online resources in her own way.

Excerpt 5.2. My own steps to use the three online resources to write in English have been established. First, I use a dictionary to search words and get a hint about expressions and then change the expressions through Google. After that, I search synonyms on COCA and make expressions natural in the use of words through COCA... It seems I made my own certain knowhow to write in English with these three online resources. (Yuna's interview quote, Session 30)

Through the repetition of the extensive writing tasks incorporating the use of the online resources, Yuna became equipped with a more sensitive awareness of language use. The use of the online resources provided her with the opportunity to verify her use of English and her writing in English. The following excerpts show such a new emergence of language use awareness.

Excerpt 5.3. I could check confusing singular and plural forms right away with awareness of such things. In the past, I used to write incorrectly for those things but now I am aware of them. (Yuna's interview quote, Session 5)

Excerpt 5.4. Now I have an awareness to check and revise my constant preposition errors and awkward use of verbs when I write, which is really helpful a lot to me. I used to write a text without such an awareness before. (Yuna's interview quote, Session 10)

Excerpt 5.5. As I have kept writing in English, I got the feeling of what will be searchable in English by online resources or not. Such a judgment ability and writing skills become changing...Now I can modify search words when I use the online resources so that I can write what I mean. Such a process seems to be improved...Now I have an awareness and a judgment on my writing whether it is written correctly or searchable through the online resources. (Yuna's interview quote, Session 30)

Considering her frequent use of Google, Yuna could develop search skills on the process of using Google. In the early period, she used to type in the whole sentence in the search box. As the main sessions proceeded, she did not search with the whole sentence but searched with a part of a sentence over several times by constantly revising the part of a sentence in the search box until the relevant results were presented. Along with this, she reported her shift of the focus in the process of writing as in the following excerpt.

Excerpt 5.6. Now I seem to focus more on evaluating whether a certain expression is correct and revising expressions such as appropriate use of prepositions between words rather than simply searching for words and writing a sentence with words from the searches...I have been through the process of revising my use of prepositions by Google, so I think I will be able to use prepositions with less errors. (Yuna's interview quote, Session 30)

She also reported that repeated expressions that she needed to use often in her writing such as paragraph connectives became familiar to her, so she

could easily use them in her writing with less searches for those kind of expressions. In the final session, she said she could use expressions like ‘in the following paragraph’ in her writing without any difficulty now. Her text could be improved by her referential and confirmatory use of NED and Google. Although there were remaining typos, she could check spelling for several words in the text and write them with correct spelling. Additionally, expressions from examples on NED and search results from Google provided rich materials to complete her text.

Her writing difficulties were usually caused by a problem of retrieval from long-term memory. She often reported that she had retrieval problems, which occurred many times as she failed to recall specific words or expressions in her production. Those words or expressions existed in her knowledge so that she could utilize them in reading process, which is receptive, but she just could not think of them when she needed to use them productively. For those retrieval problems, she was able to solve them efficiently by using the online resources. In the early period, she tended to search every details because she felt too many difficulties in writing in English. In later period, Yuna moved toward more advanced level of metacognitive strategies, which was to monitor and evaluate her own writing. Such changes are related with her perceptual changes, which will be discussed in the following section.

## **5.2. Yuna's Perception of Using Online Resources in L2 Writing**

In the beginning of the main session, Yuna was suspicious about her ability to write in English. She perceived the use of online resources as indispensable in her writing in English. Such a perception shows how Yuna appreciated the online resources as useful tools in the process of her writing in English.

Excerpt 5.7. If I don't use the online resources, I would not be able to write in English. (Yuna's interview quote, Session 1)

However, her attitude changed as the main session proceeded. She used to think that her writing was unsatisfactory and poorly written, but she could gain confidence from the use of the online resources to improve her writing. The following excerpts show her changed attitude toward writing in English.

Excerpt 5.8. I might be able to write a better text with these three online resources compared to what I used to write before. (Yuna's interview quote, Session 10)

Excerpt 5.9. I don't have to be agonized alone. I can get assistance from several tools, which is very good to know. I think I can write a better text through using these tools when my grammar will be more strengthened. (Yuna's interview quote, Session 30)

Yuna expressed her emergent confidence and more active self-directed learning motivation of writing in English in the final session. She used to take a reluctant attitude toward writing in English and felt frustrated and disappointed during the writing processes, but the thirty times of extensive

writing tasks provided her with repeated learning experience in the use of English. Her positive perception on writing in English is closely related to her affective change. She had a negative emotion toward writing in English due to her perceived difficulties in English writing. However, writing in English through the use of the online resources eased her great pressure of writing in English. She was satisfied with such an affective change and anticipated that the positive affective change may lead to the improvement of her writing skills.

Excerpt 5.10. I used to use awkward expressions a lot before but have confidence now in that I am able to revise those awkward expressions. (Yuna's interview quote, Session 30)

Excerpt 5.11. The pressure that I had about writing in English has reduced...I think it helps improve my writing skills. If I keep my psychological barrier to writing in English, I may not even challenge to write in English. However, I felt much less pressure now, so I will keep challenging to write in English again. (Yuna's interview quote, Session 30)

Although Yuna acknowledged such positive contributions of using the online resources in her writing process, she perceived the limitations of using the online resources critically especially when she failed to solve her writing problems. She sometimes faced with the situation of not finding appropriate search results that could solve her English problems. Her questions to those kind of limitations still remained unsolved.

Excerpt 5.12. I do not know what I should do when I search the expressions in question and the online resources do not show the relevant results in particular for the case of the expressions that I regarded as grammatically correct. (Yuna's interview quote, Session 30)

Yuna was aware of the fact that the ability to use the online resources appropriately and effectively is important. She thought that there should be a user's critical judgment on the process of referencing the resources. The use of information provided by the online resources requires caution of users, which should be considered in the awareness of the appropriate use of the online resources.

Excerpt 5.13. I trust 100 percent of the results that I finally obtained through the filtering process on the course of using the online resources. The online resources can be reliable when a user has ability to filter the information...Based on the ability to judge whether what the online resources provide is right or wrong, we can only trust information that has been through the process of searching for the appropriate answer. (Yuna's interview quote, Session 27)

Yuna posed two questions on her writing process with the use of online resources. One is about how to utilize the online resources to find precise English expressions that present her thought and intention correctly. The other is a difficulty in confirming the expressions found from the online resources to check whether they are correctly used. Although she was satisfied with the trimming process of her writing by using Google, she felt the lack of confidence in her expressions and questioned whether they are precisely written by what she intended.



## **CHAPTER 6**

### **WHO IS WRITING JOON’S ESSAY—JOON OR THE COMPUTER: THE CASE OF JOON**

Chapter 6 delineates and discusses the case of Joon in terms of his use of online resources while performing the writing tasks and his perception on the use of online resources in English composition. Section 6.1 presents Joon’s overall writing behaviors and writing difficulties along with the analysis of how he used online resources respectively and conjointly to support his writing needs. In Section 6.2, Joon’s thoughts and opinions on using online resources while writing in English and his affective and attitudinal characteristics related to English composition are explored.

#### **6.1. Characteristics of Joon’s Computer-Assisted L2 Writing with the Use of Online Resources**

Joon showed a relatively lower level of performance in English composition than other writers. Compared to Ara and Yuna, Joon spent more time on completing the writing tasks but produced much less amount of text. His writing was somewhat impromptu in terms of planning the text and generating and organizing ideas. Joon seemed to think what to write while he was writing a sentence. He rarely showed his consideration of overall

discourse, revision of the sentence, and review of the whole text in the process of writing. Such behaviors corroborate the findings of the previous studies that showed less skilled L2 writers' fewer revision and skilled L2 writers' more global and extensive revision considering text organization and structure (Skibniewski, 1988; Skibniewski & Skibniewska, 1986).

Considering less skilled EFL writers tend to focus on vocabulary and grammatical issues (Victori, 1999), Joon's difficulties in L2 English writing were mainly due to his lack of English vocabulary and grammar knowledge. Joon reported that he had to look up the dictionary for most words in order to write a sentence because he did not know many English words; hence his use of the online dictionary to look up a word appeared constantly in the writing process, which was to find a word or meaning of a word and to check spelling.

In connection with his weak vocabulary, Joon had a substantial difficulty in composing a sentence. Throughout the main session, Joon constantly reported his difficulties in writing grammatically correct sentences in terms of using an appropriate sentence structure in a right word order considering the parts of speech. He often reported as "it takes too much time to write a complete sentence by putting words in a right position" (from the interviews in Session 10 and Session 21).

Joon mentioned that he often faced difficulties in solving grammatical problems that he could not solve whenever he wrote a sentence especially in the area of using an appropriate tense, preposition, and relative pronoun. For those problems, he frequently reported as "I don't know how to solve them by using the online resources" and "I'm not sure whether I correctly wrote or not" during the task and the interview in the most sessions. As a result, such

difficulties led to his repeated and restricted use of simple and familiar English sentence structures all the time as strategic alternatives to compensate his lack of ability to write English sentences with diverse structures and caused problems of not knowing which part of the sentence is grammatically incorrect. Joon recognized it as “the biggest problem” (from the interview in Session 20) in his writing with the use of online resources because unnoticed ungrammatical errors remained as uncorrected. On that point, the limitation of using the online resources as L2 writing aids in the context of independent L2 writing without any external expert assistance is implied in that the online resources can be useful and effectively used only if L2 writers can detect errors, identify problems, or raise questions in their writing by themselves and know when and how to use the online resources appropriately. In this way, the combination of his weak vocabulary and his lack of ability to compose grammatically correct English sentences using a variety of sentence structures caused his overall L2 English writing difficulties.

On his writing the first draft, Joon constantly resorted to the online resources to overcome his limited ability to produce English text ranging from typing in a basic word to writing a sentence. The first venue of his producing text in English was the websites of each online resource. Joon obtained a piece of English text on the website of the online resources he used and then copied the text from the website and pasted it into the text on the notepad. He usually copied a word or words found from the online resources rather than typed them on the notepad by himself. Such ‘copy and paste’ actions continued constantly and prevailed throughout the whole sessions. After pasting the text, Joon moved on to working on the next sentence right away; he did not show

further revision on the pasted text on the notepad as if those pasted texts did not need further work. Joon explained it as “I copy and paste the text only when the text is judged as a correct one.” (from the interview in Session 22), which indicates that his writing is comprised of finding the appropriate piece of English text from the online resources and putting them together in a sentence on the notepad. The writing process presented below shows a typical way of Joon’s making a single sentence by copy and paste.

1. Wrote ‘For’ on the notepad
2. Searched ‘예를들어’ on NED → The search result showed ‘example’
3. Copied ‘example’ from NED and pasted it after the word ‘For’ on the notepad and then put a comma → [For example,]
4. Searched ‘교통’ on NED → The search result showed ‘traffic’
5. Copied ‘traffic’ from NED and pasted it on the notepad → [For example, traffic]
6. Searched ‘교육’ on NED → The search result showed ‘education’
7. Copied ‘education’ from NED and pasted it on the notepad → [For example, traffic education]
8. Typed ‘it is’ before ‘traffic’ and inserted comma between ‘traffic’ and ‘education’ on the notepad → [For example, it is traffic, education]
9. Searched ‘효과적인’ on NED → The search result showed ‘effective’
10. Copied ‘effective’ from NED and pasted it between ‘it is’ and ‘traffic’ on the notepad → [For example, it is effective traffic, education]
11. Typing ‘etc.’ after ‘education’ → [For example, it is effective traffic, education etc.], thinking aloud “짜도 되나?”
12. Searched ‘etc’ on NED → Examined the result and started a new sentence  
(from Session 30)

On the course of his copy and paste or typing the text provided by the online resources into his writing, typos and spelling omissions often occurred. As Joon usually did not notice such mistakes, they remained in the text without proofreading. He seldom found and corrected such mistakes in the course of writing, which shows his somewhat careless manner and a lack of attention

during his writing on the computer. Additionally, Joon tended to repeat words or phrases in his text by copying and pasting the previously typewritten ones rather than by typing them.

Joon's writing process consisted of twofold stages: processing of L1 Korean and processing of L2 English through the online resources. The first stage is characterized by his intensive use of Korean in the process of writing a sentence. Joon adopted a translation strategy most of the time during the writing task. It is consistent to the previous research finding that EFL writers tend to rely on translation due to limited vocabulary (Sasaki, 2004). The level of translation was ranged from a word to a sentence, and the method to translate Korean into English was intensive use of the online dictionary.

In the second stage, which is processing of L2 English, Joon had received help from the online resources to produce a sentence in English. Joon searched for words or phrases and their example sentences from the translated search results provided by NED. In this stage, Joon had opportunities to learn new knowledge of a word or an expression in English. Joon checked spelling of a word in question especially when he directly typed in English with his own knowledge and ability without using the online resources. Compared to the first stage, the weight and the proportion of the second stage seems fairly little. It seems that what Joon actually wrote was text in Korean, and Joon's text in English was written by the computer. When he checked spelling, he often typed in Korean equivalent of the word in question to look up the word. He mostly used NED, and used COCA to get further insight on his solving problems. Joon sometimes double-checked or further checked the provided results through NED, COCA, and Google.

Most of the time during the writing task, Joon searched for a single word that he would use in a sentence. Joon faced word problems very often due to his weak vocabulary while he wrote in English, so he often typed search words in Korean in the search box of NED and obtained the English equivalent. Joon used NED the most among the online resources throughout the thirty writing tasks, and his most frequent use of NED was to find an English word followed by checking the overall information of the usage and sentence structure and finding an English equivalent for a string of words in Korean.

In a sentence level, Joon often used the translator function of NED. He wrote a full sentence in Korean first on the NED translator and then operated the translator to obtain its English counterpart. In the process of using the translator, he revised his Korean sentences according to the translated results and used the translated results on his writing by copy and paste or typing as it was. Joon tried to find proper sentence structures to express the meaning of his Korean sentences through the NED translator. As he usually wrote a sentence in a simple structure, he relied on the translator function whenever he needed to write a sentence beyond a simple structure.

Even though the translations provided by the NED translator were not always correct due to its technological limitation, Joon rarely attempted to verify the correctness of the translated results. He made further searches only if he did not know the clear meaning of given expressions and felt suspicious about given expressions whether they were correctly translated. Although he often used sentences from the NED translator throughout the thirty writing tasks, not all sentences were the results of the translation. In a single sentence,

several words and phrases were from the search results on the dictionary. He wrote a sentence with many slots to fill, and the slots were filled by using the online resources.

Joon used NED the most among the online resources throughout the thirty writing tasks. His use of COCA, however, is noticeable because he used COCA twice as much as Ara and Yuna did. Joon used COCA much more and Google infrequently. Table 6.1 presents the frequency and percentage of Joon's use of each online resource, and Figure 6.1 shows the percentage of Joon's use of each online resource.

Table 6.1. Frequency of Joon's Use of the Online Resources in All Thirty Writing Tasks

	NED	Google	COCA	Total
Frequency	1720	79	240	2039
Percentage	84	4	12	100

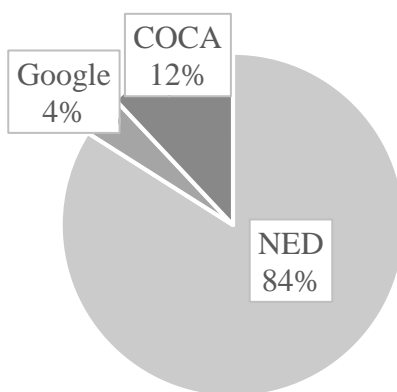


Figure 6.1. Percentage of Joon's Use of the Online Resources in All Thirty Writing Tasks

Joon used NED for checking meaning, referring to example sentences, and checking what he wrote and spelling. As Yuna did, he appreciated the value of example sentences provided by Korean translations and the related search words. He used the translator function to identify sentence structures. Joon usually wrote a sentence in a basic simple structure; he tended to use the same structure repeatedly and had needs of using a variety of sentence structure in his writing. Based on such needs, he had to resort to the information related to sentence structures provided by NED during the course of writing in English. Table 6.2 presents Joon's purpose of using NED.

Table 6.2. Joon's Use of NED in All Thirty Writing Tasks

Purpose of use	Frequency
Finding an English equivalent for a single word in Korean	714
Checking the overall information of the usage and sentence structure	350
Finding an English equivalent for a string of words in Korean (compound word, phrase, or sentence)	341
Checking meaning of a word or a string of words (phrase)	99
Finding example sentences	77
Checking what was written to see whether it is correct or not	56
Checking spelling	52
Checking inflection, conjugation, derivative	16
Checking the part of speech	9
Finding synonyms	3
Finding collocations	2
Finding antonyms	1
Etc. (Search in the portal website linked to the online dictionary)	0

Joon rarely used Google in general. He did not use Google at all in seven sessions, which are Session 15, 16, 17, 21, 22, 24, and 27. His use of Google for checking frequency of a certain expression was more often than the others.



From the early period, Joon used Google for checking frequency as an additional confirmation for the knowledge obtained from NED and COCA. He used the functions of predictive and related search to get help to find a proper sentence structure to write. The reason for the lesser use of Google for the purpose of checking what was written to see whether it was correct or not than other writers was due to his thoughts and behaviors in writing. Joon said that he did not feel a need to check what he wrote by using Google as he wrote only what he was sure. Table 6.3 shows how Joon used Google throughout the thirty writing tasks.

Table 6.3. Joon's Use of Google in All Thirty Writing Tasks

Purpose of use	Frequency
Finding examples of a word or a phrase	56
Checking usage frequency of a particular word or a phrase	11
Checking what was written to see whether it is correct or not	6
Finding a word in the slot in a string of words using an asterisk with double quotes	5
Using a translation function	1
Searching for information including the topic-related contents	0
Checking spelling	0

Joon used COCA mostly to find example sentences of a specific phrase or a string of words. Whereas Ara and Yuna used COCA mostly for searching synonyms, this was Joon's secondly ranked purpose as seen in Table 6.4. His frequently used purposes of using COCA show a relatively even distribution from the second ranking to the sixth ranking. He showed comparatively more active use of COCA than other two writers to tackle his writing problems such as using prepositions and other grammatical issues. He used COCA to confirm his findings in the dictionary, to check frequency of a certain usage,

or to compare the frequencies of competing candidates.

Table 6.4. Joon's Use of COCA in All Thirty Writing Tasks

Purpose of use	Frequency
Finding example sentences of a specific phrase or a string of words	103
Finding synonyms	27
Finding example sentences of a specific word	26
Finding collocations	24
Checking frequency (token) of a word or a phrase	23
Finding example sentences of a sentence structure	21
Checking the form of a word (spelling, inflection, conjugation, derivative)	10
Checking what was written to see whether it is correct or not	6
Etc. (Generating a word list for a particular POS, e.g., conjunction)	0

Whether the online resources are useful or useless in terms of assisting L2 writers' writing in the EFL context seems to be contingent upon L2 writers' level of L2 ability. Joon who showed relatively lower L2 writing ability in his performance of the writing tasks sometimes showed incorrect use of the online resources such as consulting the use of an article in a sentence by checking only the frequency on COCA. Joon usually kept his writing with short and simple sentence structures. He had a large discrepancy between his ability of using a variety of sentence structures in English and the sentence structure that he wanted to use to express his ideas. Therefore, he had much limitations in interpreting and making full use of the findings and information from the online resources. He did not have sufficient knowledge and ability to judge the English expressions obtained through the online resources.

His writing did not show a significant improvement throughout the entire

sessions of thirty writing tasks in terms of fluency in writing process, grammatical accuracy, and complexity of sentence structures. Some characteristics of his text and his writing a sentence are as in the following. In Session 1, Joon depended heavily on the NED translator. Every sentence of the text was the result of translation from Korean into English by the NED translator. He spent most of the time on writing sentences in Korean on the translator. Because he adopted a translation strategy, his writing a single sentence took a great deal of time in the early period of the main sessions.

He used to start with a sentence with “it”, which often indicated what he wrote in the previous sentences as a whole; it seemed to be easy and convenient for him to start a new sentence with “it” without considering the agent in the subject position of a sentence. A *Be* verb was often incorrectly used by overuse and omission as seen in the following examples: it can *be* lose (Session 2); he *was* live. He *was* gave ... (Session 6); I think that studying alone better than studying together (Session 2). Additionally, he often wrote English sentences reflecting the word order of Korean sentences.

Within such limitations, however, he could develop how he can use each online resource to solve his writing problems in his own way. Joon became a little bit more fluent in using and referring to the online resources, but his writing process did not present a remarkable improvement. In the case of Joon, more meaningful changes occurred in his perception pertaining to writing in English than linguistic development in his writing. The notable change in his attitude will be presented and discussed in the following section.

## **6.2. Joon's Perception of Using Online Resources in L2 Writing**

Joon evaluated his use of the online resources during the writing tasks as very helpful in general. He thought his difficult problems were solved easily and immediately in most cases. He appreciated a time-saving advantage of using the online resources to solve his writing problems. Excerpt 6.1 reflects such a perception.

Excerpt 6.1. I could solve many difficult and time-consuming problems through the online resources. Thus, I think they were very helpful to writing in English and solving difficulties. (Joon's interview quote, Session 30)

Joon basically perceived the role of the online resources as a problem solver and a bank of information on language use. For each online resource, he evaluated strengths and weaknesses. As seen in his most frequent use of NED, he used NED as it provided various kinds of information including several usable expressions and useful functions to facilitate his searches. He was satisfied with the help that he received NED. Excerpt 6.2 presents his total evaluation of using NED.

Excerpt 6.2. In the dictionary, related search words help me a lot as they present a variety of possibilities in a similar context. Examples with Korean translations are helpful because I am more comfortable to look examples in Korean, and thus they help me find a sentence structure that I want and that has a similar meaning easily and quickly. The list of words and expressions presented by the translator is very useful when I write a sentence...The translator is helpful a lot when I cannot write anything because I do not know how to write. (Joon's interview quote, Session 30)

Due to his limited English ability, Joon had to rely on Korean in using the online resources as he did in producing English text. The L1 Korean feature was indispensable to Joon, which made him use NED constantly during the writing tasks and appreciate it as the most useful resources among the three. His L2 writing process required his processing of L1 first, so the function of related search words assisted him to facilitate the L1 processing so that he could continue to the subsequent L2 processing, which was looking for the words or expressions through the online resources.

Joon perceived the power of using the online resources in the writing process to a great extent. He seemed to view the online resources as a panacea by itself. Excerpt 6.3 shows his belief in the capacity of the online resources and his reliance on the online resources.

Excerpt 6.3. There would be nothing to be unsolved if the online resources are used. If I have to write without using the online resources, I would not know what to do. (Joon's interview quote, Session 30)

However, this perceived almightiness of the online resources was not fully realized in his writing process because of his low English ability. Joon thought that his English ability was problematic in his writing in English and in using the online resources. He was inconvenienced by not having relevant knowledge and ability to judge the grammaticality of his writing and to detect errors in his writing. The following excerpts show his perception on the problems during the writing process.

Excerpt 6.4. I was at a stand due to my English ability rather than difficulties or inconvenience in the use of the online resources...I had a bit more difficulties or inconvenience based on my ability this time...I ran into the limitations of my

ability, so it was difficult to find the weakness of the online resources. (Joon's interview quote, Session 7)

Excerpt 6.5. The problem is my English ability...I can search details such as prepositions, words, and plural forms on the online resources, but it seems that looking at larger and global things requires my skills to be more proficient. (Joon's interview quote, Session 9)

Excerpt 6.6. Since my grammar skills are insufficient, I think increasing the completeness of a sentence is deficient when I write a sentence...I can't effectively use the online resources because I overlook errors without noticing them, which subsequently leads to missing the opportunities to revise the errors. I think this is the most problematic...I can revise grammatical errors only if I can recognize them, but I fail it because I can't. (Joon's interview quote, Session 30)

Joon perceived that the difficulties he ran into during his writing process were mostly due to his English ability. Although he was aware of the limitations of using the online resources in writing, his English ability was recognized as more problematic than the limitations of the online resources. This may suggest that the degree of the contribution that the online resources can make to L2 writing as L2 writing aids can be restricted to individual writers' L2 ability.

He thought his difficulties in English composition were tense and the use of relative pronouns. Spelling was also his weakness due to his lack of sufficient vocabulary. His difficulties still remained to be solved, but his weaknesses were overcome by the use of the online resources. In such limited capability of writing in English, Joon experienced an affective change in English writing. Joon had apprehension in writing in English; however, as seen in the following excerpt, Joon seems to take off his extreme burden on writing in English. Such a positive affective change was possible due to his

getting more experiences of writing in English and technological assistance during the writing process through the thirty writing tasks.

Excerpt 6.7. The greatest change is the change of my attitude toward writing in English. Now I became more comfortable to write in English...I had a strong aversion to writing in English, but now it disappeared. (Joon's interview quote, Session 30)

He expressed his feeling of lacking in the use of online resources in terms of learning English. He thought he ran into many limitations when he tried to solve confusing problems within his knowledge. He suggested that if error feedback functions are provided, it would be much helpful to him as it would be able to provide L2 learning opportunities as well as L2 writing support.

## **CHAPTER 7**

### **DISCUSSION**

Chapter 7 discusses significant issues drawn from the case of the three Korean adult EFL writers in the present study. The chapter begins with a comparison between the writers and then discusses emerging issues to consider in the context of EFL writers' computer-assisted L2 writing in English. The issues to discuss are positive influence of computer-assisted L2 writing on the EFL writers' affective aspect, significance of L2 writing experience and practice to the EFL writers, suggested L2 writing aid technology for EFL writers' computer-assisted independent L2 writing, the role of an L2 writing teacher, and defining L2 writing ability in the era of new technology.

#### **7.1. Similarities and Differences Among the Three Writers**

In the process of writing in English assisted by online resources, the EFL writers of the present study showed individually different strategies and behaviors in terms of their own way of using the online resources and perception of using online resources in computer-assisted L2 writing.

First, each EFL writer showed a different use pattern of each online resource in terms of frequency, proportion, and purpose. The total frequency of using each online resource varied with the writers. Although NED was the most frequently used by all of the writers, the proportion of NED among the



use of the three online resources appeared differently; while Ara's and Joon's using NED occupied over eighty percent, Yuna used NED much less as 49 percent owing to her much use of Google. For the use of Google as L2 writing aids, the main purpose of using Google appeared differently among the writers; Ara often used Google for finding examples of a word or a phrase in question to confirm her finding from NED or her knowledge as hypotheses testing before writing it on the text while Yuna mainly used it for proofreading to check and correct her writing. Yuna's using Google to search for topic-related information is noticeable as such a use was almost never found in the case of Ara and Joon. It shows Yuna's different view on using Google for L2 writing aids, which is distinguished from other two writers. In case of using COCA, Ara and Yuna mostly used it for finding synonyms, but Joon usually searched for example sentences of a specific phrase of a string of words.

Such different patterns of using each online resource seem to be caused by the writers' different perception and evaluation of the role and features of each online resource and the writing task. While Google was much enjoyed by Yuna and also utilized by Ara, Joon did not use it much as he thought Google was relatively useless to him compared to the helpfulness of other two resources, NED and COCA. He mentioned, "Google does not have its own unique functions." in his final interview in Session 30. While all the three EFL writers highly appreciated COCA as a useful resource, Ara and Yuna thought the writing tasks of the present study did not much require them to use COCA. It led to their less use of it compared to other online resources resultantly; they thought using COCA would be more helpful when they have more advanced and challenging writing tasks such as writing a research

article. In addition, the English monolingual interface of COCA was perceived as somewhat inconvenient and challenging to use by these EFL writers, which prohibited them using COCA more frequently during their L2 writing. As the writers' perception of each online resource can shape a certain pattern of using it, such a pattern also reflects a writer's preference for a certain online resource to use in a certain way when they took care of their L2 writing problems and needs.

The individual differences in using the online resources also imply the writers' different needs, approaches, and strategies related to their L2 writing ability in the course of writing in English. Although the common ground of these EFL writers' L2 writing process was dependence on their L1 resource, which appeared as indispensable for their L2 writing, their needs emerging in the process of L2 writing led to a different aspect of computer-assisted L2 writing. As Ara adopted a translating approach in her L2 writing, which was to translate her outline written in Korean into English, her use of the online resources was characterized as making the online resources as translation support tools. Yuna showed her exploring and exploiting full potential of the online resources as L2 writing aids to obtain various kinds of L2 writing assistance from language to content matter; she searched for topic- and content-related information to bring it on her text and sample essays available on the Web to obtain a discourse structure model which helped her to organize ideas, sentences, and paragraphs of her essays. The novice writer Joon showed rather restricted use of the online resources due to his insufficient L2 knowledge especially in regard to vocabulary, grammar, and sentence structures, which are fundamental to one's L2 writing ability. As he struggled

with the problems of writing a complete and grammatically correct sentence and of finding equivalent English words or expressions to Korean, he spent most time on using the online resources to solve these writing problems. Therefore, his writing process lacked a review of what he wrote and overall reflection of the whole written text; he barely finished his searches on the online resources and then promptly copied and pasted or typed what he found on the Web to his own text. Joon's L2 writing was characterized as mechanical operationalization of a basic but superficial level of writing for the most part according to his best way to write in English on a computer with using the online resources.

Although grammar and vocabulary are L2 writers' fundamental concerns (Silva, 1992), how these concerns are realized and solved in the process of L2 writing differs from individual to individual. When technological support for L2 writing is available, L2 writers' approaches to such concerns are affected by using technology. These cases indicate a need to consider individual EFL writers' L2 writing needs, approaches, and strategies in a bid to guide EFL writers to a suitable way of utilizing online resources as L2 writing aids of their own, and a certain relationship between the EFL writer's English ability and his/her ability to utilize the online resources needs to be considered as well in the implementation of using the online resources as L2 writing aids in the context of independent L2 writing.

The EFL writers of the present study generally showed a positive perception of computer-assisted L2 writing with an awareness of its limitations in the context of independent L2 writing. Their positive perception of computer-assisted L2 writing is based on their positive evaluation of the

value of using the online resources as L2 writing aids, which were useful and supportive to their L2 writing in English, and an affective change that these writers experienced through the thirty sessions of computer-assisted L2 writing.

In the beginning of their participation in the study, all of the three EFL writers expressed their feeling of helplessness when they wrote in English. They had a negative perception toward writing in English; they had L2 writing apprehension or fear even to a great extent and lacked confidence in writing English. These EFL writers recognized writing in English as an extremely challenging task that they could not perform or fully complete by themselves and thus were more or less likely to avoid an event of writing in English; their self-efficacy of L2 writing was extremely low. However, their negative psychological state related to their emotions, perceptions, and attitudes toward L2 writing in English appeared to be influenced by their practice and experience of computer-assisted L2 writing in the present study. From the first session, the writers were impressed by what they could achieve in the task of writing in English by themselves with the assistance of online resources. Throughout the whole sessions, the writers were satisfied with using the online resources during the writing task, and their perception of writing in English drastically changed from something they are unable to do by themselves to something more manageable by the assistance of the online writing resources. Such a positive change in these EFL writers' perception of L2 writing is quite inspiring when considering their initial negative perception toward writing in English and affective aspects that EFL writers struggled with.

These EFL writers' initial negative emotion and lack of confidence toward writing in English may be due to a lack of appropriate experiences that can foster and support L2 writing confidence. Previous studies have examined L2 writing confidence (McCarthy & Garcia, 2005; Sasaki & Hirose, 1996) and L2 writing experience (Kobayashi & Rinnert, 2001; Kubota, 1998; Takagaki, 2003) respectively, but none of them investigated or discussed a direct connection between L2 writing experience and L2 writing confidence. There are only a study that relates L2 writing confidence to L1 writing ability (McCarthy & Garcia, 2005) and a study that revealed a relation between a lack of L2 writing experience and low L2 proficiency (Kubota, 1998). EFL writers' L2 proficiency, L2 writing confidence, and L2 writing experience can be interactive with each other as components of an individual L2 writer, and findings from the present study imply a missing link between L2 writing confidence and L2 writing experience, which would be more significant in the context of Korean adult EFL writers.

Without prior various and extensive L2 writing experience, these EFL writers became used to the task of computer-assisted L2 writing while they participated in the study, and their becoming familiar with such a writing task may have contributed to their perceptual and attitudinal changes. Toward the end point of the whole sessions, all the writers expressed their confidence of writing in English when the online resources are available to assist their L2 writing and their satisfaction of obtaining confidence in L2 writing. The use of computer technology in the writers' L2 writing process and the accumulation of such an experience seem to be effective to improve the writers' self-efficacy of L2 writing in the present study. The computer-

assisted L2 writing experience boosted these EFL writers' L2 writing confidence that can motivate them to write in English; now they are more willing to take opportunities to write in English with self-confidence to some degree.

Such an encouraging change of these EFL writers' affective aspects and perceptions of themselves as L2 writers coexists with the limitations of computer-assisted L2 writing in the context of independent L2 writing. Even though the EFL writers could gain confidence in L2 writing in English, it does not imply that they are confident in their own text written through the process of computer-assisted writing. These EFL writers were aware of defectiveness and incompleteness of the texts they produced, which require further assistance beyond the computer technologies available in the present study. All the writers talked about a need of an L2 writing expert or more advanced computer technologies that can review and evaluate their writings, give evaluative feedback or comments on their writings, and suggest what should be revised and improved; these were perceived as a sufficient condition for these writers to have fully functioning confidence both in their process and product of computer-assisted L2 writing. The completed texts produced by these EFL writers demonstrated that what the EFL writers can make most of using the online resources in their computer-assisted independent L2 writing can be limited by the writers' ability to detect and recognize errors to be corrected and ability to revise their writings by themselves. As the present study focused on the investigation of the EFL writers' use of the online resources in their computer-assisted L2 writing, the issue of presenting and incorporating self-correcting methods in the training of independent EFL

writers' use of the online resources as L2 writing aids in computer-assisted L2 writing needs to be considered and further investigated. It also brings up the issue of pedagogical implementation that substantializes a combination and integration of EFL writers' skills of self-revision and of using the online resources as L2 writing aids.

The Korean adult EFL writers of the present study are graduate students in doctoral programs who have multilayered L2-writing-related needs. As L2 writers in the Korean EFL context, they are struggling L2 writers who are seeking extra help on the course of writing in English that can solve their problems in L2 writing and buttress their affective dimension. Based on the discussion above, the issues that emerged from the case of the three Korean adult EFL writers of the present study are discussed in the following section.

## **7.2. Emerging Issues**

### **7.2.1. The Positive Influence of Computer Technologies on EFL Writers' Affective Dimension**

The present study provides a case that can demonstrate how computer technologies positively affect EFL writers' affective aspects in terms of writing-related perceptions and attitudes. A previous study that explored computer-assisted writing and writing apprehension of L2 writers (Phinney, 1991) showed an inspiring effect of using a computer, which includes improvement of L2 writers' perception of their problem-solving ability and overall attitude toward writing in English by relieving the L2 writers' fears.

Considering that the previous study was conducted in an ESL classroom setting, the present study offers an additional prospect in a relation between the use of computer technology and L2 writers in the context of independent L2 writing beyond the language classroom in the EFL context.

EFL writers who can be categorized as struggling writers compared to L1 writers essentially need external assistance in their L2 writing as their internal or intrapersonal resources are not able to satisfy all of their L2 writing needs. Therefore, EFL writers can be more vulnerable to writing anxiety in English and low self-efficacy in L2 writing. Previous studies argued that the perceived L2 writing competence is a predictor and the most crucial factor of L2 writing anxiety (Cheng, 2002; Kim, 2006), and self-efficacy beliefs are influential on foreign language learning achievement (Mills, Pajares, & Herron, 2007). For that reason, how EFL writers view and feel about L2 writing in English, L2 writing tasks, and their L2 writing ability are important in understanding EFL writing and should be considered significantly when designing a method of learning and teaching L2 writing in EFL pedagogy. It has been suggested that promoting students' positive and practical perception of their writing ability is important as much as developing their writing ability (Cheng, 2002). As seen in Hayes' (1996) new expanded writing model that includes an individual writer's motivation and affect as a component, the EFL writer's affective dimension should be significantly considered in relation to the effect of using computer technology in L2 writing.

Computer-assisted L2 writing appeared to allow EFL writers to gain L2 writing confidence while they are involved in L2 writing process that incorporates the use of computer technologies as L2 writing aids. In the



Korean EFL context, it is comparatively easy to access computer technology to obtain L2 writing assistance as presented in this study. Considering EFL writers' L2-writing-related affective states and their views on L2 writing in English, methodological approaches to EFL writing may need to consider technology-integrated L2 writing, which can provide a practical approach to L2 writing in the EFL context and foster EFL writers' robust and constructive attitudes toward L2 writing by easing and reducing the affective burden on L2 writing.

#### **7.2.2. The Value of Writing Experience and Practice**

The above discussion of computer technologies' positive influence on EFL writers' affective dimension is interrelated with proper experiences of computer-assisted L2 writing. An unskilled or inexperienced EFL writer may not be able to become skillful or experienced in L2 writing without satisfactory experiences of writing in English in terms of both quantity and quality. EFL writers in most cases lack proper L2 writing experiences in terms of both quantity and quality; this can be related to EFL writers' L2 writing anxiety or apprehension, lack of L2 writing confidence, and low L2 writing self-efficacy beliefs. A previous study revealed a negative correlation between bilingual writing experience and writing apprehension (Betancourt & Phinney, 1988), which convinces a need of having writing experience to support writers' affective aspect. Considering that significance of L2 writing experience and practice in the EFL context has not been widely attested by empirical evidence, the present study poses consequence of L2 writing experience and practice to EFL writers in conjunction with computer-assisted

L2 writing.

The Korean adult EFL writers of the present study had opportunities to practice and experience L2 writing through somewhat intensive computer-assisted L2 writing sessions. In the beginning, the writers felt a distance between the L2 writing task and their self-perceived L2 writing ability due to the absence of sufficient experience of writing in English and lack of performance ability to utilize their L2 writing knowledge. Throughout participating in the series of computer-assisted L2 writing sessions, the EFL writers gained L2 writing experiences, which were also L2 writing practice to them, and the EFL writers' accumulated L2 writing experience of the present study has significant implications for pedagogical issues of what kinds of L2 writing experience should be provided to EFL writers, helpful L2 writing experience that EFL writers should have, and how to design EFL writers' L2 writing experience in the course of their L2 writing development.

L2 writing experience can be more crucial than L2 knowledge or L2 ability in some way to develop L2 writing ability of EFL writers who have less experienced writing in English in particular. The question of how to solve EFL writers' L2 writing problems, including a lack of confidence and self-efficacy due to the absence of experience, leads to the question of designing L2 writing experience that enables EFL writers to be ready for authentic L2 writing tasks as being confident and independent L2 writers. Seen from the EFL writers of the present case study, the answer could be suggested as computer-assisted L2 writing experience based on the use of the online resources as L2 writing aids.

To overcome the distance between EFL writers' self-perception or self-

efficacy beliefs of their L2 writing ability and their actual L2 writing ability, the experience and practice of computer-assisted L2 writing could play a role of a cushion or a bridge to narrow the gap. To make EFL writers better equipped with appropriate self-efficacy of L2 writing and positive attitudes toward L2 writing, training of L2 writing practice to accumulate L2 writing experience with the use of online resources as L2 writing aids can be significant to foster independent L2 writers' L2 writing confidence and basic knowledge of grammar and vocabulary as fundamental parts of L2 writing ability. As seen in the EFL writers of the present study, computer-assisted L2 writing experience helped form the writers' own writing practices and also provide opportunities of L2 learning to some extent. The language learning potential of L2 writing in foreign language context (Manchón, 2011; Manchón & Roca de Larios, 2011) can be considered as well in relation to L2 writing practice and experience.

Swain's (1995) Output Hypothesis, which discusses three functions of output in language acquisition as noticing the gap of language learners' intended meaning and linguistic repertoire, hypothesis testing, and promoting explicit and metalinguistic understanding of the target language, is relevant to the present study. Applying Swain's Output Hypothesis to the present study, the EFL writers noticed the gap when they performed L2 writing tasks and tried to narrow the gap by using the online resources to compensate their insufficient L2 repertoire. They also tested their own hypotheses about English while they used the online resources in a complementary way, which may serve as a deeper process of language learning. L2 writing itself can provide such a significant spot for language learning that can support for L2

writing development.

The matter of how Korean adult EFL writers can have practical experiences of writing in English out of the classroom and what they can do for improvement of their L2 writing ability by themselves can be considered in computer-assisted L2 writing environment in the era of technological innovations. As the advent of new technology such as a computer and the Internet has affected greatly our practices of writing, writing experiences of the present and the near future incorporate technological aspects. As the present study attempted to explore the incorporation of computer technology into Korean adult EFL writers' L2 writing process, consideration of utilizing and maximizing the potential of computer-assisted L2 writing as a beneficial experience to EFL writers can be propounded.

### **7.2.3. Proposal for Future Technology to Assist EFL Writers' L2 Writing**

The present study also suggests technologies for computer-assisted L2 writing that need to be further developed to satisfy EFL writers' L2 writing needs. The three EFL writers requested desirable functions and technologies beyond what is currently available in the study. First of all, the EFL writers wanted a function that can detect and correct their L2 writing errors. As finding their own errors in their written text is not easy for them, their errors still remained when they finished the writing task. As L2 writers' incapability of solving error problems has been also argued in a previous study (Sze, 2002), the problem of error correction can be seen as the limitations of independent computer-assisted L2 writing practice. Considering a relation between the EFL writers' ability to utilize the online resources as L2 writing aids and their

L2 ability, the error feedback system that can detect errors and suggest possible candidates to revise the text is requested.

Although the online dictionary of the present study offered information of usage and related grammar on the webpage of the lexical entry, the EFL writers of the present study did not seem to fully refer to and utilize the useful given information. Therefore, an effective way to present relevant information that can help EFL writers solve their L2 writing issues in question at the precise moment needs to be developed. A writing platform or a word processor embedded with a function that displays popup notes of useful tips or hints and relevant information on writing issues in question at the moment in real time is desired, which may require more advanced technologies such as natural language processing and artificial intelligence. Technology of providing automatic feedback on writing errors can be based on error tagging technology of learner corpus research, which is linked to automatic grammar-checking for language learners.

The pattern and purpose of the EFL writers' using the online resources in the present study also provide some insights to design a better and improved interface and functions of online resources that can assist L2 writing on computers. In case of COCA, the EFL writers were inconvenienced by not having L1-included information and interface. They preferred an L1-L2 bilingual interface and wanted L1 translation for L2 data displayed in COCA, which suggests that a bilingual parallel corpus would be more useful than monolingual corpus to EFL writers. A previous study also suggested introduction of bilingual corpus tools to EFL writers (Lai & Chen, 2015).

Unsolved problems remaining in EFL writers should be appropriately

treated to help the writers develop and improve their L2 writing ability. Considering the difficulty of receiving focused assistance to overcome the EFL writer's writing obstacles, suggested L2 writing aid technology for independent EFL writers' computer-assisted L2 writing should be considered and developed. Until pertinent technologies to deal with these problems appear, such needs should be carefully considered by other ways including external resources outside an EFL writer. This leads to a discussion about the role of a helper as an expert in L2 writing who can provide further assistance to EFL writers.

#### **7.2.4. The Role of a Teacher**

The present study was conducted in an independent L2 writing setting out of the classroom. Without any human assistance, the EFL writers of the present study performed computer-assisted L2 writing tasks by themselves using the online resources as L2 writing aids. The EFL writers, however, felt the need of having a human expert who can help them write in English. Such a need suggests what current technology cannot help EFL writers' computer-assisted independent L2 writing and thus what should be complemented to overcome the limitations. Therefore, the findings may imply the area that an L2 writing teacher can serve without losing EFL writers' independence and autonomy in their computer-assisted L2 writing.

Computer-assisted L2 writing can be adopted as an individual writing activity or homework in the classroom curriculum. From the present study, the following can be suggested and considered as an L2 writing teacher's roles : (1) teaching and training how to use the online resources for L2 writing

aids to EFL writers, (2) providing a guidance to help EFL writers' use of the online resources and application of the findings to their text so that the writers do not make errors in the use and application of the online resources, and (3) evaluating the appropriateness of the writers' use and application of the online resources and the written text to provide feedback for revision. The online resources have valuable potential to become useful L2 writing aids, but such potential can be easily limited by a writer as a user. Considering that EFL writers bring their L2 writing difficulties to the site of using the online resources, a writing teacher should be able to connect the online resources and the writers' difficulties in L2 writing. A possibility of inefficiency of self-study and limitations of computer-assisted L2 writing in the context of independent L2 writing need to be carefully considered along with a role of an L2 writing teacher as a guide and a facilitator in the environment of integrating computer technology into L2 writing process.

#### **7.2.5. Defining L2 Writing Ability in the Era of New Technology**

The study raised the issue of defining L2 writing ability considering the impact of computer technology on L2 writing. None of the currently available working models of L2 writing reflect the influence of computer technology as one of the external resources that can be utilized and incorporated in the course of L2 writing. Innovative perspectives and new understanding of L2 writing ability and performance may need to consider the impact of technology on L2 writing and on L2 writer and include L2 writer's ability to utilize technology in L2 writing. This suggests both theoretical and practical implications for L2 writing theory and practice.

As seen in the present study, it is necessary to consider a new type of concept and component of L2 writing ability that include and reflect technology. Especially in the Korean EFL writing context, computer-based technological assistance in L2 writing needs to be considered by its implementation and limitations. The EFL writers of the present study had help from computer technology that was perceived as necessary to complete L2 writing tasks. The writers' unexpected affective changes due to their computer-assisted L2 writing experiences suggest a useful role of computer technology such as a facilitator, an assistant, a supporter, and a confidence booster in the context of independent L2 writing. Considering the future EFL writing pedagogy, the current L2 writing theories and practices should be evolved into the one that covers technological dimension in L2 writing process and reflects the changes in writing environment and writing manner due to technological advances.

When computer technology is appreciated and acknowledged as an influential component of an L2 writing model, it would bring an issue of L2 writing assessment. Technology-incorporated L2 writing process entails other related factors to consider such as how to test, assess, and evaluate L2 writing and how to define and measure L2 writing ability. Test environment, writing task, and technology resources available to test takers should be taken into consideration in a renewed writing model in the era of technological innovation. There should be more discussion to define L2 writing ability in light of using technology in L2 writing. The new definition of L2 writing ability may throw a question whether not only L2 vocabulary knowledge but also the ability to find out the right L2 word by using computer technology



and to use it appropriately should be equally considered and integrated as a component of L2 writing ability.

## **CHAPTER 8**

### **CONCLUSION**

Chapter 8 presents the conclusion of the study. The chapter discusses pedagogical implications of this study on the field of second language writing and suggestions for further studies in the line of the present study. Section 8.1 presents a discussion of pedagogical applications and suggestions considering computer-assisted L2 writing in the Korean EFL context. Section 8.2 presents and discusses potential research topics based on the present study.

#### **8.1. Pedagogical Implications**

Regardless of an educational setting whether it is in or out of the classroom, computer technologies enable EFL writers to access and to use available online resources ubiquitously. Considering Hyland's (2003) discussion of the role of a teacher in the context of using technology in L2 pedagogy ("Computers do not replace teachers but crucially depend on them, both so that technology is used effectively in the time available and so that students receive adequate support.", p. 172), the findings from the present study have the following pedagogical implications on L2 writing pedagogy in the era of technological innovation.

This study suggests the necessity of integrated consideration of three dimensions of cognition, affective aspects, and computer technology in L2 writing pedagogy, especially in the context of EFL writing in Korea. The

overriding focus of designing EFL writing pedagogy should be on an EFL writer who is also a learner or a student of the English language; in designing instructive L2 writing experiences and making pedagogical decisions, a writer's cognitive and affective factors should be considered in balance to understand and identify writer-related characteristics along with the use of technology engaged in dynamic L2 writing process.

In the consideration of designing useful pedagogic methods for teaching and learning L2 writing, individual L2 writers' L2 ability should be considered along with their cognitive and affective characteristics. Based on that, computer technology can play a role of a platform to provide opportunities to practice and train L2 writing while easing an L2 writer's cognitive load and blockage in the writing process, filling the gap in a writer's L2 knowledge, and relieving a writer's affective burden related to L2 writing. When an EFL writer's cognition and affective aspects and computer technology are appropriately combined in pedagogical consideration, EFL writers would be able to benefit from assistive methods and resources for their L2 writing.

The pedagogical consideration may start from the consideration of EFL writers' active use of online resources to assist their L2 writing with a systemic approach. The computer-assisted L2 writing and online resources can be useful scaffolding that can support, assist, and facilitate EFL writers' L2 writing overall from process to production. To EFL writers, having recognition of the existence of such useful online resources and potentials of using them as L2 writing aids would be the first step. It is suggested that L2 writing teachers also should be aware of the usefulness of incorporating the

use of online resources in L2 writing so that they can introduce them to their students. Based on such awareness and acknowledgment of using computer technologies in L2 writing, practical use of them through L2 writing activities is highly recommended rather than just let EFL writers have information on how to use them. The actual practice and training on using them during L2 writing should be followed if the value of using the online resources are appreciated appropriately in L2 writing pedagogy. EFL writers' long-term use of the online resources as tools to assist their L2 writing would be able to bring a positive change in EFL writers' awareness and contribute to their self-reflection on their L2 writing, which would be able to lead EFL writers to be independent lifelong English language learners through self-access and self-directed use of the easily accessible online resources on the Web.

The use of the online resources can assist EFL writers in the process and production of L2 writing, and the findings of the present study imply EFL writers' affective aspects should be seriously considered in L2 writing pedagogy. Although the range of individual differences in L2 writing apprehension might be wide, making connection between the use of online resources and treatment of EFL writers' apprehension for L2 writing would be beneficial. Through intensive and extensive use of online resources as L2 writing aids during the writing process, EFL writers could find a way to improve their negative affect related to L2 writing.

EFL writers need to be provided with L2 writing experiences in a way that can improve their perceptions of and attitudes toward L2 writing in English positively. Being equipped with useful L2 writing experiences that promote L2 writing confidence and reduce a negative emotion related to L2 writing,

EFL writers will be able to solve their problems of having a negative emotion related to writing in English. Computer-assisted L2 writing can be such a helpful way to provide EFL writers with instructive L2 writing experience that can contribute to L2 writing skill, L2 learning, and widening EFL writers' understanding of language use.

For the issue of how to train EFL writers' writing in English, classroom pedagogy should be conducted in conjunction with what EFL writers can do beyond the classroom, which promotes self-study and independent learning through writing by themselves. The use of online resources and related computer technologies with its training and the ability to use them should be considered. The use of such technologies as external resources and L2 writing aids needs to be encouraged and extended in the process of writing in English from a perspective that views EFL writers as struggling writers. It means it is necessary to encourage writing in English on computers with using online resources. As a method to train EFL writers in L2 writing, computer-assisted L2 writing with using online resources as references and resources for L2 writing can be suggested; this can be seen as a skilled L2 writer's writing strategy, which is both cognitive and affective in the age of technology.

The inclusion of training of using online resources in the curriculum of L2 writing is also considered. When EFL writers write in English by using online resources, they can have L2 writing confidence, and their autonomy and self-efficacy of L2 writing can be improved and enhanced. The ultimate objective of an EFL writer should be an independent writer who can write in English by themselves and boost one's L2 writing ability rather than depending on computers. In order to do so, an individual EFL writer should be able to

receive appropriate assistance through online resources, human resources, and advanced technologies to be developed in accordance with the level of one's L2 writing ability. Thus, training of using online resources should be accompanied by teaching of L2 writing as one of cognitive and affective L2 writing strategies. Therefore, it is necessary to investigate how existing online resources can be utilized to support EFL writers' writing in English and to evaluate its values such as an assistant role or EFL writers' essential aid tools.

Having the experience of writing in English and training in digital literacy by computer-assisted L2 writing is also considered. The EFL writers who participated in the present study as Korean adult graduate students had affective burden about their L2 writing requirement of an advanced level such as writing a research paper, without having a prior sufficient experience of writing in English. Repetitive training and experiences of writing in English are valuable to EFL writers as it can provide useful awareness and recognition of their own weaknesses and noteworthy points when they write in English, along with improvement, development, and reinforcement of self-efficacy and autonomy of L2 writing as EFL writers, which serve as a stepping stone to the next step.

In relation to L2 writing experience, EFL writers' affective burden should be considered. It is necessary to consider their affective aspects and issues such as apprehension and a negative emotion toward L2 writing in English. More various, effective, and fundamental approaches to EFL writing as well as more research on development of teaching and learning methods can contribute to improve and resolve EFL writers' writing-related affective problems. Identifying and understanding those characteristics and analysis of

needs and wants in each situation and context are required. EFL writers' anxiety of writing in English and their awareness of and attitudes toward L2 writing in English should be exactly identified. EFL writers' training in writing in English in a text discourse level, their understanding of writing in English, and development of their own way of writing in English should be considered as well.

For the limitations of EFL writers' self-detection and self-revision of errors in their own L2 writing, feedback on errors is required. Error feedback can be provided by capable L2 writing teachers or by more advanced technologies, which require further research and development. When EFL writers are trained in using online resources as L2 writing aids, the result of applying it to their own writing should be reviewed and evaluated. The role of L2 writing teacher in this context can be discussed as in the following: first, effective training of using the online resources in L2 writing; second, providing evaluative feedback and comments on EFL writers' writing produced by computer-assisted L2 writing; lastly, writing assessment and consideration of assignment in liaison with self-study out of the classroom.

The use of EFL writers' L1 cannot be excluded in pedagogical consideration of implementing computer-assisted L2 writing. The significance and influence of L1 should be reflected appropriately in L2 writing models. The role and the function of L1 are not optional in EFL writers' L2 writing; L1 should be recognized as a resource to effectively utilize in L2 writing process. As a usable resource, EFL writers need to use L1 strategically in their L2 writing process. Finding and recognizing the differences between L1 and L2 are important to EFL writers especially who

approach L2 writing by L1 to L2 translation methods. Considering EFL writers' affective dimensions and the role of L1 are part of understanding EFL writers' characteristics. Identifying Korean adult EFL writers' practical L2 writing ability and their related affective features should be practically conducted. Finding a way to minimize EFL writers' affective burden and a negative emotion and to develop L2 writing ability simultaneously is required.

Considering EFL writers living in the high-tech world, an approach to EFL writing should be more practical. The change of writing practices due to technology of the day and in the future should be considered in the concept of L2 writing. The basic skills and related components of L2 writing should be redefined through research on L2 writers and using computer technologies in L2 writing, and the weight of a technology element needs to be reflected and presented in L2 writing models. There should be a further pedagogical discussion of technology-incorporated EFL writing, the impact of technology in L2 writing, and other related accompanying concepts so that L2 writing ability can be defined in a paradigm that includes technology-related factors as a part of EFL writers' L2 writing ability. This is also a discussion of how digital technologies shape and affect writing practices and how to teach or develop digital literacy (Warschauer, 2009) of the present and the future generation of EFL writers. In terms of pedagogic application to Korean EFL writers, how to use technology in teaching, learning, and practice of L2 writing should be carefully designed.

Applying computer-assisted L2 writing to the EFL context depends on the access to technology and related resources. The EFL writers of the present study had access to the technology and resources and could easily use them.



If such technologies are not available in one's writing environment, one should solve a problem of the access to these technologies. In order to implement technology-assisted L2 writing in English, being equipped with the writing environment that has a computer with Internet access as a writing tool in and out of the classroom should be preceded, and it would allow applications of the pedagogical implications of the present study to EFL writing. Considering the impact of new technologies on L2 writing-related practices in the era of technology innovations, the ability to utilize high-tech resources for L2 writing aids as part of EFL writers' digital literacy could be included as a component of L2 writing ability.

Another pedagogical implication of computer-assisted L2 writing and using external online resources is its application to L2 writing test situations. It is recommended to consider the impact of technology on the way of writing in the twenty-first century in designing L2 writing tests so that the tests can reflect technological aspects of EFL writers' L2 writing in English. Considering future changes of the way of writing caused by technological development, providing technological tools as L2 writing aids and allowing test takers to use them in their performance on the L2 writing test are suggested. There should be also consideration of washback effect and the range of using them. It is connected with the issue of training in the use of computer technology in the process of L2 writing in English.

## **8.2. Suggestions for Further Studies**

The present study shows how computer-assisted L2 writing can improve the Korean adult EFL writers' L2 writing anxiety and their self-efficacy of writing in English. Further studies can investigate to confirm the effect and contribution of computer-assisted L2 writing experiences and practice of using online resources as L2 writing aids to Korean EFL writers with L2 writing anxiety and low self-efficacy through different research methods with different participants. As the present study is a qualitative case study, the propounded research topic could be explored by quantitative research methods.

A study that incorporates the intervention of an L2 writing expert as a role of a teacher, a mentor, or a tutor is suggested. The present study does not include external human resources as its focus is on independent EFL writers' computer-assisted L2 writing. In terms of helping EFL writers' L2 writing in English, a combination of computer technology and human resources and their interaction and its effect can be investigated. The use of online resources and the way to utilize them in the context of providing feedback from an L2 writing expert in the course of L2 writing and on the produced text can be further studied. The feedback on EFL writers' first and second drafts that guides revision of the draft by using the online resources and interaction between the feedback and the aspect of using the online resources can be explored. The study of how external human resources as L2 writing experts can support EFL writers' computer-assisted L2 writing can tell us another aspect that computer technology can contribute to L2 writing in English.

A study that investigates the aspect of utilizing online resources in L2 writing can be conducted with younger EFL writers such as children or adolescents, EFL writers with different levels of L2 proficiency or L2 writing ability, or EFL writers with different degrees of L2 writing experience. If such differences between the EFL writers are clear and can be compared in a study, it will be able to provide a relation between EFL writer variables and the aspect of computer-assisted L2 writing along with the use of the online resources.

Further studies that will enrich the present research topic could be as in the following. First, a study of teaching and learning methods to provide L2 writing experiences that can relieve EFL writers' L2 writing apprehension caused by a lack of experience, knowledge, and ability of L2 writing in English is suggested. Second, an investigation of EFL writers' L2 writing development in relation with using online resources in the course of computer-assisted L2 writing is suggested, considering EFL writers' acquisition and improvement of L2 writing ability and learning of L2 writing. It requires empirical studies such as experimental studies and case studies. Lastly, research on the development of feedback system technology that can enhance computer-assisted independent L2 writing is suggested. Continuous technological innovation will not only change EFL writers' way of writing in English, but also change research methods to investigate second language writing. L2 writing research and pedagogy in the future should be aware of technology along with its critical assessment.

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# APPENDICES

## APPENDIX 1

### Writing Topic List

#### 1. Persuasion

- 1) A company is going to give some money either to support the arts or to protect the environment. Which do you think the company should choose? Use specific reasons and examples to support your answer.
- 2) Do you agree or disagree with the following statement?  
***Business should do anything they can to make a profit.***  
Use specific reasons and examples to support your position.
- 3) Do you agree or disagree with the following statement?  
***Children should begin learning a foreign language as soon as they start school.***  
Use specific reasons and examples to support your position.
- 4) Do you agree or disagree with the following statement?  
***Boys and girls should attend separate schools.***  
Use specific reasons and examples to support your answer
- 5) Do you agree or disagree with the following statement?  
***Children should be required to help with household tasks as soon as they are able to do so.***  
Use specific reasons and examples to support your answer.
- 6) Your school has enough money to purchase either computers for students or books for the library. Which should your school choose to buy—computers or books?  
Use specific reasons and examples to support your recommendation.

#### 2. Comparison-Contrast

- 1) It has been said, “***Not everything that is learned is contained in books.***” Compare and contrast knowledge gained from experience with knowledge gained from books. In your opinion, which source is more important? Why? Use specific reasons and examples to support your answer.
- 2) Some people prefer to live in a small town. Others prefer to live in a big city. Which place would you prefer to live in? Use specific reasons and examples to support your answer.
- 3) It is better for children to grow up in the countryside than in a big city. Do you agree or disagree? Use specific reasons and examples to develop your essay.
- 4) Some people like to travel with a companion. Other people prefer to travel alone. Which do you prefer? Use specific reasons and examples to support your choice.

- 5) Some people prefer to get up early in the morning and start the day's work. Others prefer to get up later in the day and work until late at night. Which do you prefer? Use specific reasons and examples to support your choice.
- 6) Do you agree or disagree with the following statement?  
***Face-to-face communication is better than other types of communication, such as letters, email, or telephone calls.*** Use specific reasons and details to support your answer.
- 7) Which would you choose? A high-paying job with long hours that would give you little time with family and friends or a lower-paying job with shorter hours that would give you more time with family and friends? Explain your choice, using specific reasons and details.
- 8) Is it more important to be able to work with a group of people on a team or to work independently? Use reasons and specific examples to support your answer.
- 9) Students at universities often have a choice of places to live. They may choose to live in university dormitories, or they may choose to live in apartments in the community. Compare the advantages of living in university housing with the advantages of living in an apartment in the community. Where would you prefer to live? Give reasons for your preference.
- 10) Some people prefer to spend time with one or two close friends. Others choose to spend time with a large number of friends. Compare the advantages of each choice. Which of these two ways of spending time do you prefer? Use specific reasons to support your answer.
- 11) Some people think that children should begin their formal education at a very early age and should spend most of their time on school studies. Others believe that young children should spend most of their time playing. Compare these two views. Which view do you agree with? Why?
- 12) Some people prefer to plan activities for their free time very carefully. Others choose not to make any plans at all for their free time. Compare the benefits of planning free-time activities with the benefits of not making plans. Which do you prefer—planning or not planning for your leisure time? Use specific reasons and examples to explain your choice.
- 13) Some people enjoy change, and they look forward to new experiences. Others like their lives to stay the same, and they do not change their usual habits. Compare these two approaches to life. Which approach do you prefer? Explain why.
- 14) Some people trust their first impressions about a person's character because they believe these judgments are generally correct. Other people do not judge a person's character quickly because they believe first impressions are often wrong. Compare these two attitudes. Which attitude do you agree with? Support your choice with specific examples.
- 15) Some students like classes where teachers lecture (do all of the talking) in class. Other students prefer classes where the students do some of the talking. Which

type of class do you prefer? Give specific reasons and details to support your choice.

- 16) Some students prefer to study alone. Others prefer to study with a group of students. Which do you prefer? Use specific reasons and examples to support your answer.
- 17) Some people prefer to eat at food stands or restaurants. Other people prefer to prepare and eat food at home. Which do you prefer? Use specific reasons and examples to support your answer.

### **3. Description**

- 1) What are some important qualities of a good supervisor (boss)? Use specific details and examples to explain why these qualities are important.
- 2) A person you know is planning to move to your town or city. What do you think this person would like and dislike about living in your town or city? Why? Use specific reasons and details to develop your essay.
- 3) Choose one of the following transportation vehicles and explain why you think it has changed people's lives. < automobiles, bicycles, airplanes > Use specific reasons and examples to support your answer.
- 4) People work because they need money to live. What are some other reasons that people work? Discuss one or more of these reasons. Use specific examples and details to support your answer.
- 5) What do you want most in a friend-someone who is intelligent, someone who has a sense of humor, or someone who is reliable? Which one of these characteristics is most important to you? Use reasons and specific examples to explain your choice.
- 6) If you could study a subject that you have never had the opportunity to study, what would you choose? Explain your choice, using specific reasons and details.
- 7) A foreign visitor has only one day to spend in your country. Where should this visitor go on that day? Why? Use specific reasons and details to support your choice.
- 8) If you could travel back in time to meet a famous person from history, what person would you like to meet? Use specific reasons and examples to support your choice.
- 9) People have different ways of escaping the stress and difficulties of modern life. Some read; some exercise; others work in their gardens. What do you think are the best ways of reducing stress? Use specific details and examples in your answer.
- 10) Some people prefer to spend most of their time alone. Others like to be with friends most of the time. Do you prefer to spend your time alone or with friends? Use specific reasons to support your answer.
- 11) You have the opportunity to visit a foreign country for two weeks. Which country would you like to visit? Use specific reasons and details to explain your choice.
- 12) Movies are popular all over the world. Explain why movies are so popular. Use

reasons and specific examples to support your answer.

#### 4. Opinion

1) People attend college or university for many different reasons (for example, new experiences, career preparation, increased knowledge). Why do you think people attend college or university? Use specific reasons and examples to support your answer.

2) Do you agree or disagree with the following statement?

***Parents are the best teachers.***

Use specific reasons and examples to support your answer.

3) Do you agree or disagree with the following statement?

***Television has destroyed communication among friends and family.***

Use specific reasons and examples to support your answer.

4) In some countries, teenagers have jobs while they are still students. Do you think this is a good idea? Support your opinion by using specific reasons and details.

5) Do you agree or disagree with the following statement?

***People should sometimes do things that they do not enjoy doing.***

Use specific reasons and examples to support your answer.

6) Do you agree or disagree with the following statement?

***With the help of technology, students nowadays can learn more information and learn it more quickly.***

Use specific reasons and examples to support your answer.

7) Do you agree or disagree with the following statement?

***Games are as important for adults as they are for children.***

Use specific reasons and examples to support your answer.

8) Do you agree or disagree with the following statement?

***The best way to travel is in a group led by a tour guide.***

Use specific reasons and examples to support your answer.

9) Some people say that computers have made life easier and more convenient. Other people say that computers have made life more complex and stressful. What is your opinion? Use specific reasons and examples to support your answer.

10) Do you agree or disagree with the following statement?

***Technology has made the world a better place to live.***

Use specific reasons and examples to support your opinion.

11) Some people say that the Internet provides people with a lot of valuable information. Others think access to so much information creates problems. Which view do you agree with? Use specific reasons and examples to support your opinion.

12) Some people prefer to live in places that have the same weather or climate all year long. Others like to live in areas where the weather changes several times a year. Which do you prefer? Use specific reasons and examples to support your

choice.

13) In your opinion, what is the most important characteristic (for example, honesty, intelligence, a sense of humor) that a person can have to be successful in life? Use specific reasons and examples from your experience to explain your answer.

14) Do you agree or disagree with the following statement?

***Reading fiction (such as novels and short stories) is more enjoyable than watching movies.***

Use specific reasons and examples to explain your position.

15) In some countries, people are no longer allowed to smoke in many public places and office buildings. Do you think this is a good rule or a bad rule? Use specific reasons and details to support your position.

## **5. Free Topics**

Five topics chosen by each participant considering their needs and interests:

*Ara's free topics:*

1. An abstract for my research article
2. A letter to a friend
3. Why I like winter
4. Why I like Seoul
5. Why I like both Paris and Seoul

*Yuna's free topics:*

1. Self-introduction
2. My daily routines on weekdays
3. Recommendations for spring outing
4. Why London is better than Paris for tourists
5. A summary of my research

*Joon's free topics:*

1. Topic 2-11 from the writing topic list
2. Self-introduction
3. My future and career plan
4. Why I like sunny weather
5. What is love?

## APPENDIX 2

### Writing Topics Written by Each Participant

Session No.	Ara	Yuna	Joon
1	1-1	1-1	2-2
2	2-2	3-11	2-16
3	4-2	2-4	4-10
4	3-1	4-6	3-4
5	1-2	2-2	2-17
6	2-4	4-10	3-8
7	3-11	4-12	4-13
8	1-3	1-2	2-14
9	4-8	3-7	1-3
10	2-7	3-3	2-3
11	3-4	3-9	1-4
12	2-16	2-17	4-2
13	3-10	4-2	4-6
14	1-4	5-1	2-6
15	2-10	3-1	4-3
16	5-1	4-3	5-1(2-11)*
17	1-5	1-3	5-2
18	2-17	1-4	3-9
19	3-3	2-9	3-10
20	4-9	4-5	1-2
21	3-7	3-6	1-6
22	4-10	1-5	3-1
23	5-2	1-6	4-12
24	4-15	2-13	3-12
25	1-6	2-7	5-3
26	4-13	5-2	1-1
27	5-3	5-3	1-5
28	5-4	5-4	5-4
29	5-5	5-5	5-5
30	1-1	1-1	2-2

*\*Joon chose Topic 2-11 as his first free writing topic.*

## APPENDIX 3

### Samples from the Participants' Compositions

#### 1. Ara's text in Session 1

Both supporting the arts and protecting the environment are an important activity for a company. However, if I should choose one of these alternatives, I prefer to spend some money to protect the environment.

Nowadays, Paris Climate Change Conference is being held since about a week ago. It proves how important the environmental issues is considered to be by global society.

Therefore, a company has to spend the money to protect the environment.

Implementing social responsibility in a business to improve the corporate sustainable development. And, in general, a firm must build the long-term customer relationship for seeking profit.

For these reasons, I prefer to invest in protecting the environment rather than giving some money to support the arts.

#### 2. Ara's text in Session 30

I think a company should give some money to protect the environment because a company plays a leading role to manufacture goods from natural resources. We must hand down to future generations the natural environment. I will give further reasons.

First of all, an enterprise has an enormous capability to change the society with huge amount of money. Nowadays, as we can easily experience more and more nature disaster, we recognize this phenomenon such a risk. Thus, a company should play a key role to motivate people and spend money to protect natural environment.

Second, not only destroyed nature takes a lot of time to recover, but also most of destroyed parts are almost impossible to recover. Therefore, we should spend many money to preserve the natural environment before being more destroyed. Actually, many companies pursue the ecological value at first to hand down the natural environment to the next generations and finally this activity helps to create positive corporate image.

For those reasons, I prefer to spend money on protecting the environment. This will be a core competence to manage a company in long term.

### 3. Yuna's text in Session 1

I think that protecting the environment will be better than supporting the arts in the situation that a company is going to give some money. There are two reasons for supporting my opinions.

Before the first argument, it has to be determined that meaning of protecting the environment involve saving energy. Because saving energy by using alternative energy such as wind energy and solar energy can help to reduce greenhouse gas so saving energy is protecting the environment.

The first reason why a company has to spend money to protect the environment is that protecting environment can give big profit to company. For example, if a company use solar energy instead of electricity, a company has to invest a great deal of money to install facilities for solar energy. However, electric cost will be dramatically decreased by using solar energy so a company can finally save the money in terms of long-term.

The second reason is that protecing the environment is giving back profit to society. For instance, if a company give some money to protecing water quality of river, river would be cleaned in the future. Saving the ecosystem of river is protecting the lives of mebers of society from bad environmental conditions.

A company prefer to give money to protect environment rather than to support the arts. Because a company can get the benefit and can get back profit to social by protecting environment.

### 4. Yuna's text in Session 30

Some people think that a company have to give some money to support the arts. However, I don't agree with that. I think that company should choose protecting the environment. I will describe two reasons why I think so in the following paragraphs.

First, giving some money to protect the environment is not just spending money but investing for development of company. For example, company will save much energy charge if company spend money on facilitating solar cell. In other words, installation charge for solar cell will be returned by cost cutting in electricity bill. Furthermore, enterprise impage will be improved to the public if company spend money to construct wastewater treatment center. So it can cause to raise sales of manufactured goods from your comany.

Second, the main aim of company should not only produce profits but also be social enterprise.

So many companies sometimes give some money to help poor people or countries. Giving some money to protect environment is also one of method company to contribute to society. If environment is severely polluted, all of society's members share the environmental damages. I would like to emphasize again that comapany giving some money to protect environment is very needed.

From these reasons, I think that giving some money to protect the environment is more clever choice than to supprot the arts for profits of company and society.



## 5. Joon's text in Session 1

Many people who want to live in a different locations each. some people want to live in a small town. why they are want to live in small town? When I lived in a small city many merits and demerits. the first merits, so have a positive impact on children's health. but living environments compared to big cities is uncomfortable.

When lived in a big city's merits is living in big cities is useful for children's education better than small cities and comfortable to travel, shopping.

but people can be complicated because there are crowded and busy.

but if you like hanging out with people I recommend living in a big city.

because people can go out with many people.

everybody can have different preferences. therefore his preference will choose the place where you can have more.

## 6. Joon's text in Session 30

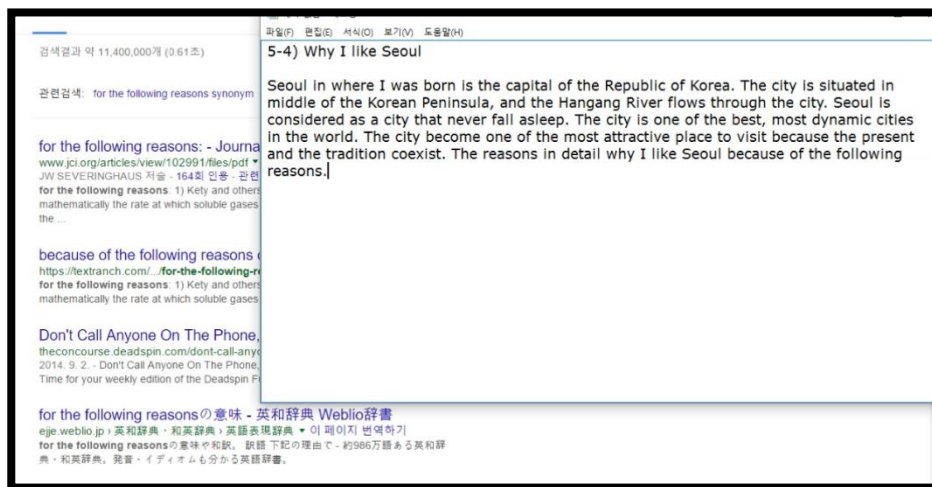
Now, I live in a big city. The city where I live is biggest city in Korea. Here living many people. So, Here is very busy. Individually, I dislike busy. And I like leisurely and slow.

In fact, if someone ask me to choose where are you live in a big city or small town. I will choose small town. Because, as mentioned earlier, I like leisurely. In fact, living in a big city is comfortable better than live in a small town. For example, it is effective traffic, education etc. But, individually, I like leisurely better than these things. If you live in a small town I will be pleased with things such as the sweet air and leisurely lifestyle. Living in a small town may not leisurely because farming or other things. So, I want enjoy relaxedness. Anyway, living in a small town or big city have each pros and cons. The choice is yours.

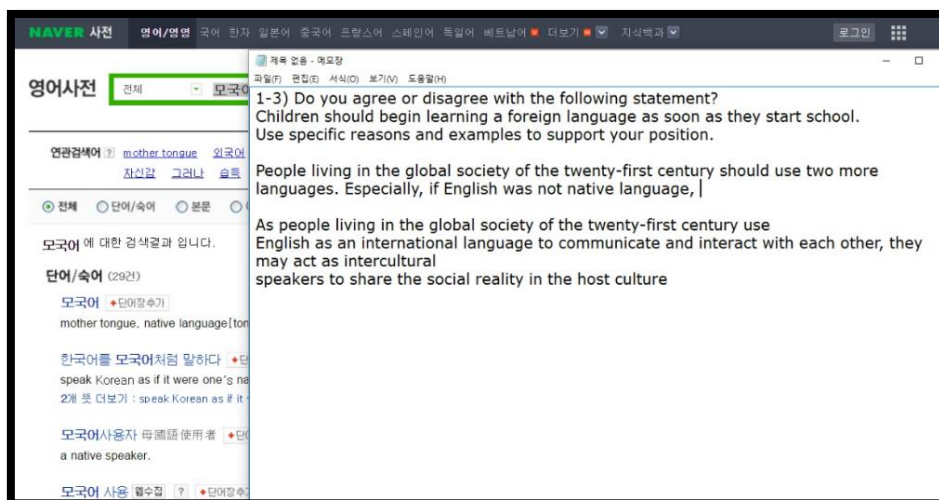
## APPENDIX 4

### A Sample Screenshot of Each Participant's Writing Process

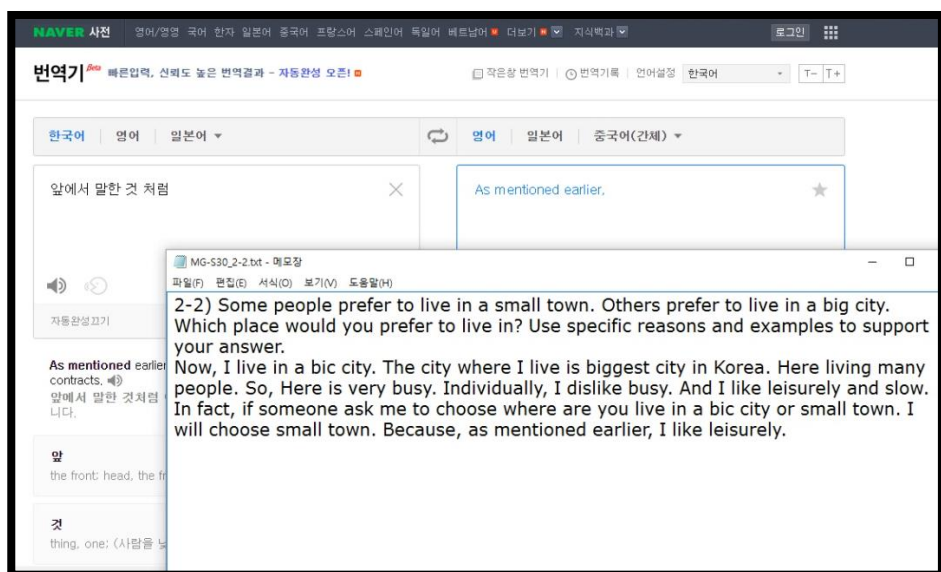
#### 1. Ara's writing process in Session 28



#### 2. Yuna's writing process in Session 17



### 3. Joon's writing process in Session 30



## **APPENDIX 5**

### **Lai and Chen's (2015) Taxonomy of Dictionary and Corpus Consultation Purposes**

Lai and Chen classified the below 17 consultation purposes in their study. The present study adopted their taxonomy as a top-down approach to develop the coding scheme for the writing process transcript which was used to analyze the participants' online resource use.

1. Find an L2 equivalent for a single word
2. Check the usage and sentence structure
3. Find an L2 equivalent for a string of keywords
4. Check collocation
5. Confirm meaning
6. Find an alternative
7. Check spelling
8. Check inflection
9. Confirm collocation
10. Check meaning
11. Confirm spelling
12. Find related information
13. Check punctuation
14. Find an antonym
15. Confirm the part of speech
16. Check the part of speech
17. Check countability

## APPENDIX 6

### Orientation Materials Introduction to the Online Resources

Orientation Program:

- Learning the use of the online resources through a detailed practical demonstration of major functions of each online resource
- Participant's hands on practice
- Q & A sessions and further tutorial sessions

#### 1. Naver English Dictionary

URL: [endic.naver.com](http://endic.naver.com)

Major search functions available 주요 기능 상세 안내 및 시연

- Korean-English and English-Korean bilingual dictionary 한영/영한 사전
- Searching a single word / phrase / sentence 단어 / 어구/ 문장 단위 검색 지원
- Predictive in the search box 검색창 자동완성 기능
- Specific searches using a wild card (\*, ?) 상세검색 와일드카드 사용
- Related searches 연관검색어
- Translator (A Beta version) 번역기
- Hypertext: linked pages to other entry 다른 항목으로 이동: 하이퍼텍스트 링크

#### 2. Google

URL: [www.google.com](http://www.google.com)

Major search functions available 주요 기능 상세 안내 및 시연

- Search operator and Advanced search (e.g. put exact words in quotes, using an asterisk as a placeholder) 검색연산자 및 고급검색  
(<https://support.google.com/websearch/answer/2466433>)
- Predictive in the search box 검색창 자동완성
- A list of searches related to keyword 관련검색

#### 3. COCA

URL: [corpus.byu.edu/coca](http://corpus.byu.edu/coca)

Major search functions available 주요 기능 상세 안내 및 시연

- Conceptual understanding of corpus and concordance
- Features of COCA
- Query syntax manual (Query syntax table provided by COCA)

## 국 문 초 록

본 연구는 컴퓨터 기술의 발달로 인해 생겨난 새로운 기술들이 외국어로서의 영어 작문에 어떻게 활용될 수 있으며, 컴퓨터 기술의 도움을 받는 영작이 영작 과제를 수행하는 한국 성인에게는 어떠한 영향을 주는지에 대한 사례 연구이다. 첨단 기술의 발달로 인해 작문 환경에는 많은 변화가 있었고 컴퓨터와 인터넷 기술의 발전은 새로운 작문 과정 및 방식을 가져왔다. 컴퓨터를 사용한 외국어 작문 시 온라인 자원들을 통해 도움을 받을 수 있는데 이에 대한 연구는 아직 광범위하게 이루어지지 않았다. 이러한 연구 주제 안에서 한국 성인이 컴퓨터 보조 영작을 할 때 온라인 자원을 어떻게 사용하는가와 온라인 자원을 사용하는 컴퓨터 보조 영작에 대한 그들의 인식은 어떠한가에 대한 연구 질문을 가지고 본 연구가 진행되었다.

이를 위해 먼저 외국어 작문에 영향을 주고 관여하는 요소들과 외국어 작문 모형, 컴퓨터 보조 외국어 작문에 대한 기존 연구들을 중심으로 문헌 연구가 이루어졌다. 기존 연구들은 외국어 작문에서 기술 요소의 반영이 부족하거나 부재했고, 기술 요소를 적극적으로 고려한 교실 밖에서의 한국 성인의 영작을 다룬 연구와 여러 가지 온라인 자원을 동시에 사용한 양상을 조사한 연구는 필요성에 비해 많이 이루어지지 않았다. 이에 대해 본 연구는 질적 사례 연구 방법으로 연구 주제에 접근하여 현상을 자세히 관찰하고 분석하였다.

연구에 참여한 세 명의 한국인은 컴퓨터 상으로 영작 과제를 수행하면서 인터넷에서 온라인 사전, 검색 엔진, 코퍼스와 같은 세 가지 온라인 자원을 활용하였다. 총 30회에 걸쳐 매회마다 참여자들은 선택한 주제에 대해 한 편의 영작문을 작성하였고, 영작 과제를 마친 후에는 인터뷰가 실시되었다. 참여자들은 영작문을 쓰는 과정 중에 생각을 소리 내어 말하기를 동시에 수행하였다. 이러한 영작 과정과 인터뷰는 각각 컴퓨터 스크린으로 녹화되고 녹음되었으며 전사되었다. 각 온라인 자원의 사용

양상은 사용 목적에 따라 분류되어 분석되었고, 인터뷰는 내용의 주제에 따라 분류되어 분석되었다.

세 명의 한국 성인 사례에서는 모두 모국어가 영작 과정 전반과 온라인 자원의 사용 방식에 영향을 주는 것으로 나타났다. 번역 방식으로 영작에 접근하는 양상이 지배적으로 나타남에 따라 한국어 사용이 가능한 온라인 사전의 의존도가 가장 높게 나타났으며, 참여자들은 사전의 예문들이 한국어 번역과 함께 제공되는 것을 유용하게 여겼다. 검색 엔진과 코퍼스의 경우 각 성인마다 사용 양상에 차이가 있었는데, 이는 각 온라인 자원의 기능과 활용에 대한 인식과 평가 및 영작 과제에 대한 인식의 차이로부터 기인하였다. 또한 영작 능력의 수준과 영작 방식에 따라 온라인 자원을 활용하는 양상이 다르게 나타났다.

세 명 모두 컴퓨터 보조 영작에서 온라인 자원 사용의 가치를 높게 인식하였으며, 각 자원의 기능, 영작에 기여하는 정도, 본인의 심리적 측면에 기여하는 바를 긍정적으로 인식하였다. 컴퓨터 기술의 도움을 받는 영작 경험을 통해 이들은 영작에 대해 가졌던 불안감과 부정적인 정서가 해소되었고 이전보다 영작에 대한 자신감을 가지게 되어 영작에 대한 태도가 향상되었다. 컴퓨터 보조 영작을 통한 영작 경험과 온라인 자원의 사용은 참여자들의 영작에 대한 인식 및 자기효능감에 변화를 가져오는 것으로 나타났다. 이들은 이러한 영작 환경에서 독립적인 영작 수행이 가지는 한계 또한 인식하였다. 본인이 파악하지 못한 영작 오류에 수정이 이루어지기 위해서 영작 전문가의 도움이나 그에 준하는 필요를 인식하였으며, 온라인 자원에 대해서는 한국어와 영어가 동시에 제공되는 이중언어 사용자 환경을 선호하였다.

본 연구에서 조사한 사례들을 통해 다음과 같은 다섯 가지가 논의되었다. 첫째, 컴퓨터 기술은 외국어로서의 영작을 수행하는 한국 성인들에게 정서적으로 긍정적인 영향을 준다. 둘째, 한국 성인들에게 영작 경험과 연습은 크게 중요하며, 이들에게 기술 요소가 적극적으로 반영된 영작 경험을 제공하는 것을 고려할 필요가 있다. 셋째, 외국어로서의 영작을

수행하는 이들을 돕기 위해 개발되어야 할 기술 및 온라인 자원의 특성과 기능을 논의하였다. 넷째, 컴퓨터 보조 영작에 있어서 교사가 가질 수 있는 역할을 논의하였다. 마지막으로 새로운 기술의 발전이 이루어지는 시대에 외국어 작문 능력이 어떻게 정의되어야 할 것인가에 대해 논의하였다.

위와 같은 사례 분석과 논의를 바탕으로 본 연구가 외국어 작문 교육에 시사하는 바와 후속 연구에 대한 제언을 결론으로 제시하였다. 한국 성인의 영작 교육에 있어서 학습자의 언어 인지적 특성과 정서적 특성과 컴퓨터 기술의 활용에 대한 고려가 균형 있게 이루어져야 한다. 영작 과정에서 온라인 자원을 적극적으로 사용하는 것을 권장하되 영작 능력의 향상과 발전을 위해서는 영작 수준에 따라 기술 사용에 대한 체계적인 접근이 요구된다. 이러한 온라인 자원의 활용 가치에 대한 교사들의 인식이 필요하며, 학습자들이 가지는 영작에 대한 부담감을 파악하고 이에 대한 정서적 지원을 모색할 필요가 있다. 여기에 컴퓨터 기술의 도움을 받는 영작 방식이 그 역할을 할 수 있으며, 이를 통해 학습자들이 영작 경험을 가지게 하는 것을 제안할 수 있다. 또한 교실 안팎에서 자기주도적이고 독립적인 영작 수행을 가능하게 하기 위해 학습자의 영작 오류에 대한 처치를 제공할 수 있는 보다 발전된 기술이 개발되어야 하며, 영작 평가 방식에서도 온라인 자원을 사용하는 영작이 고려될 수 있을 것이다.

주요어: 한국인 영작, 컴퓨터 보조 제2언어 작문, 코퍼스, 온라인 사전,

검색 엔진, 제2언어 작문 보조 도구, 기술

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